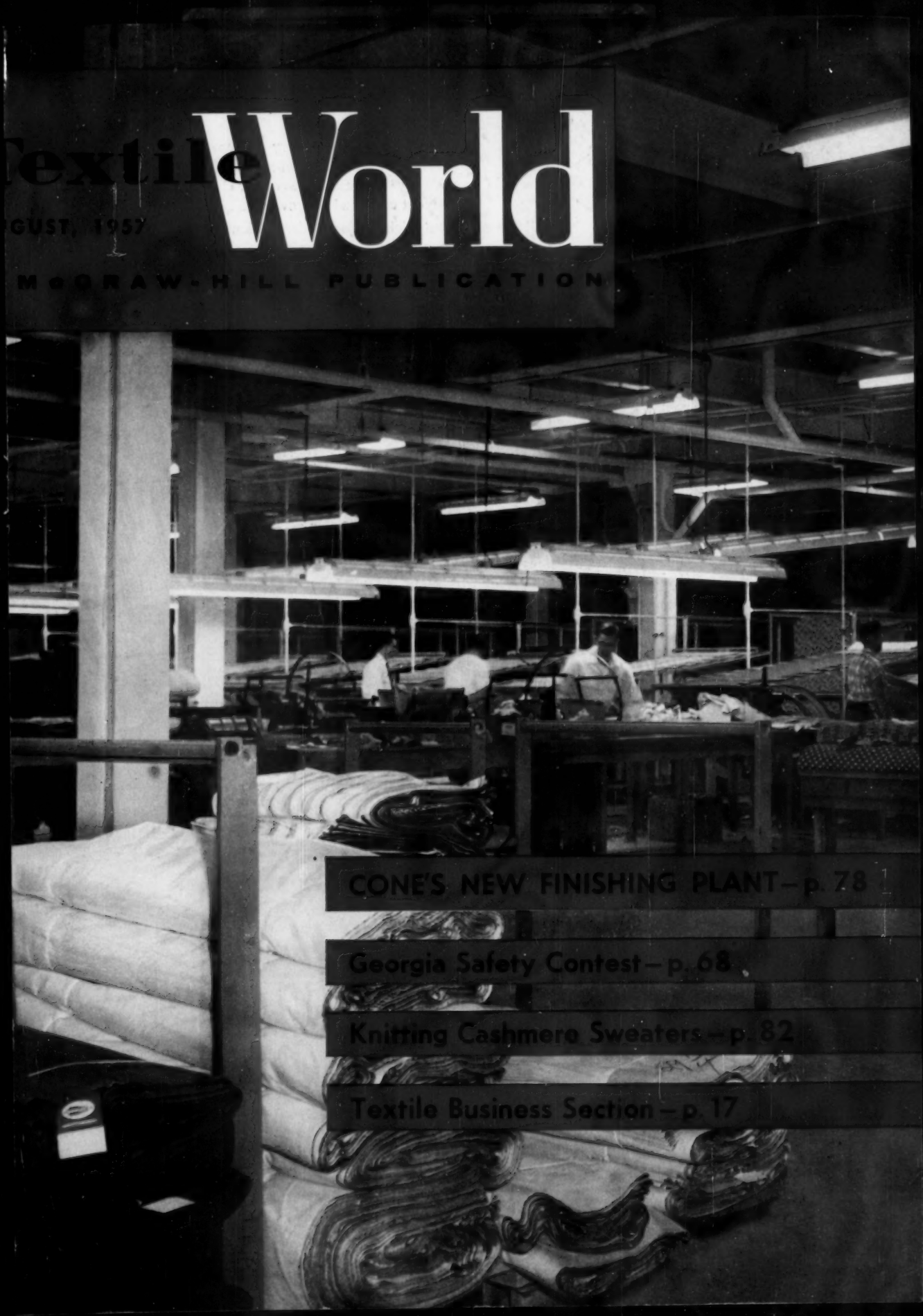
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AUGUST, 1957
McGRAW-HILL PUBLICATION
CONE'S NEW FINISHING PLANT—p. 78
Georgia Safety Contest—p. 68
Knitting Cashmere Sweaters—p. 82
Textile Business Section—p. 17

Textile Engineering

MODERNIZATION & EXPANSION

Modern machinery and production layouts, prepared and executed by Robert and Company Associates, have enabled scores of our clients to step-up production, cut costs and improve quality.

For one client, eight major modernization projects have been put into operation at one mill without loss of one day production. A large and complete staff with long experience in all phases of textile engineering enables us to start promptly and finish on schedule within the budget.

A survey of your existing mill operations and future requirements may show you how you can expand and modernize your production without interruption of output.

ROBERT AND COMPANY ASSOCIATES

Textile Engineering Division

ATLANTA

DRAPER SPINDLES

DRAPER
all-steel top drive anti-friction spindles permit better spinning at lower cost

Concave collar and washer design makes "plumbing" easier and faster. Spindle slippage is reduced to a minimum.

Welded construction eliminates possibility of doffer guards becoming loose.

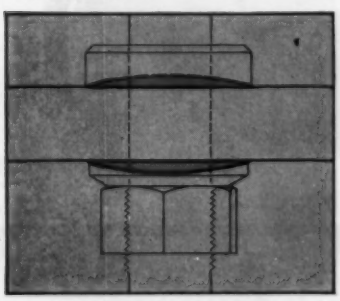
Incorporated whorl design permits easier removal of waste yarns when doffing and simplifies manual braking. Bolster life, spindle speeds and quality of yarn are all increased.

Power requirements, lubrication cycle, blade vibration and ends down are all reduced.

In addition . . . it's an accepted fact that Draper conforming fit maintains a more even bobbin line than any other Top Drive.

Let a Draper spindle specialist analyze your spindle needs today.

Concave collar and washer design makes "plumbing" easier and faster.



DRAPER CORPORATION

Hopedale, Mass.

Atlanta, Ga. *Greensboro, N.C.* *Spartanburg, S.C.*

For more data, write this page number on Reader-Service card. →

WILDMAN JACQUARD

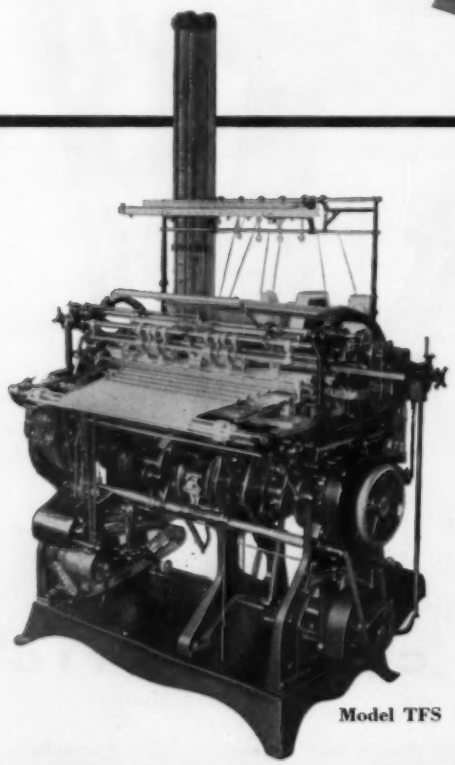
the accent is on quality fabrics

Whether it be full fashion or plain interlock, fabrics made on Wildman Jacquard knitting machines are "distinctively different" in quality and appearance.

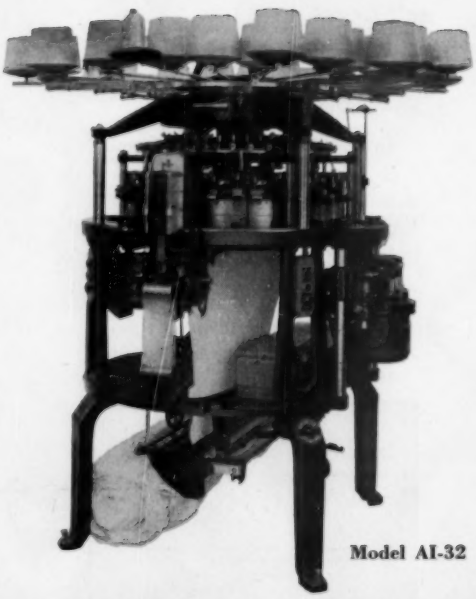
The "TFS" 30″ single section full fashion machine permits increased production, multiplicity of sizes to be run simultaneously, less downtime and greater ease of operation.

The model "AI" 32″ diameter 32 feed "single purpose" circular interlock machine (rib type) produces a larger, more serviceable piece of true interlock fabric.

For knitting versatility, production, and quality — specify Wildman Jacquard Knitting Machinery.



Model TFS



Model AI-32

For complete information, write:

WILDMAN JACQUARD CO. . . . *leading manufacturers of fine knitting machinery*

1210 Stanbridge Street, Norristown, Pennsylvania • *A subsidiary of* **Draper Corporation Hopedale, Mass.**

Textile World

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Textile World

CALENDAR

September

AATT, Della Robbia Room, Vanderbilt Hotel, New York, N. Y., Sept. 4.

Fiber Society, Textile Institute, joint meeting, Hotel Statler, Boston, Mass., Sept. 4 to 6.

AATCC, Southeastern Section, Harmony Club, Columbus, Ga., Sept. 14.

Textile Quality Control Association, fall meeting, Barrington Hotel, Charlotte, N. C., Sept. 19 & 20.

AATCC, South Central Section, Hotel Patton, Chattanooga, Tenn., Sept. 20.

Northern Textile Association, annual meeting, Wentworth-By-The-Sea, Portsmouth, N. H., Sept. 25 & 26.

Combed Yarn Spinners Association, annual meeting, The Cloister, Sea Island, Ga., Sept. 26 & 27.

AATCC, Delaware Valley Section, New York Section, Trenton, N. J., Sept. 27.

Carded Yarn Association, annual meeting, The Cloister, Sea Island, Ga., Sept. 27 & 28.

AATCC, Piedmont Section, Hotel Barringer, Charlotte, N. C., Sept. 28.

Textile Operating Executives of Georgia, fall meeting, Hightower Textile Building, Georgia Institute of Technology, Atlanta, Ga., Sept. 28.

October

AATT, Della Robbia Room, Vanderbilt Hotel, New York, N. Y., Oct. 2.

Chemical Finishing Conference, National Cotton Council of America, Statler Hotel, Washington, D. C., Oct. 2 & 3.

Southern Textile Methods & Standards Association, fall meeting, Clemson House, Clemson, S. C., Oct. 10 & 11.

Alabama Textile Operating Executives, fall meeting, Thach Auditorium, Auburn, Ala., Oct. 12.

AATCC, Rhode Island Section, Providence Engineering Society, Providence, R. I., Oct. 24.

AATCC, Mid-West Section, Bismarck Hotel, Chicago, Ill., Oct. 26.

National Industrial Packaging & Handling Exposition, Convention Hall, Atlantic City, N. J., Oct. 28 to 31.

November

AATCC, Delaware Valley Section, Sheraton Hotel, Philadelphia, Pa., Nov. 1.

AATCC, Western New England Section, annual meeting Hartford, Conn. area, Nov. 1.

AATT, Della Robbia Room, Vanderbilt Hotel, New York, N. Y., Nov. 6.

Electrical Applications for the Textile Industry, Sixth Annual Conference, Reddick Laboratory Auditorium, North Carolina State College, Raleigh, N. C., Nov. 14 & 15.

AATCC, national convention, Hotel Statler, Boston, Mass., Nov. 14 to 16.

December

AATT, Della Robbia Room, Vanderbilt Hotel, New York, N. Y., Dec. 4.

AATCC, Rhode Island Section, annual meeting, Providence, R. I., Dec. 5.

AATCC, Delaware Valley Section, Kugler's Restaurant, Philadelphia, Pa., Dec. 6.

AATCC, Northern New England Section, annual meeting, Hotel Continental, Cambridge, Mass., Dec. 6.

AATCC, Southeastern Section, Dinkler Plaza Hotel, Atlanta, Ga., Dec. 7.

AATCC, Western New England Section, Rapp's Restaurant, Shelton, Conn., Dec. 13.

SUBSCRIPTIONS are solicited only from executives, engineers, and technicians in textile manufacturing or finishing plants. Position and company connection must be indicated on subscription order. Single copies $1.00. Subscription rates—United States and Possessions and Canada, $2.00 a year; all other countries, $15.00 a year. Second-class mail privileges authorized at Albany 1, N. Y. Printed in U. S. A.

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Double Check Strap Life

with Gates *TEX-HIDE* Multi-Check Straps

Actual service records prove Gates patented Tex-Hide Multi-Check Straps last twice as long as ordinary straps.

Unlike straps made in one solid band, Gates Multi-Checks are composed of four separate bands.

Multi-Checks minimize adjustments . . . cut "down time"

Tex-Hide — an exclusive Gates material — has a special capacity for absorbing shocks over long periods.

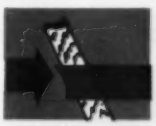
Furthermore, it is unaffected by humidity . . . will not stretch or distort like leather . . . retains its original shape throughout the life of the strap. Thus, adjustments are seldom required.

With Gates patented Tex-Hide Multi-Check Straps you'll get *smoother* loom operation . . . *higher* quality cloth . . . lower maintenance costs.

The Mark of Gates *Specialized* Research

The Gates Rubber Co., Denver, Colorado

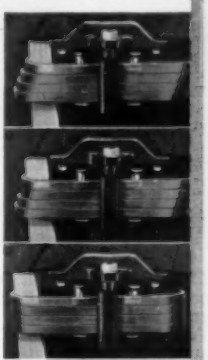
GATES Distributors are in the Yellow Pages



See the difference

With the ordinary one-band strap all the shock and wear from the picker stick are concentrated at one point. The strap deforms rapidly; takes a permanent bowed set. The deformed strap checks only on the extreme ends of the pick and return stroke — result is an uneven check.

Now see why the *four bands* of the Gates patented Tex-Hide Multi-Check Strap give smoother checking action . . . insure long life.



1. As the checking action begins, a portion of the picker stick force is absorbed by the top band.

2. As the stick continues its return motion, the second band comes into play, absorbing more of the shock.

3. And the checking action is completed as the third and fourth bands gradually absorb the remaining energy in the picker stick.

The checking action is smooth, even and gentle — wear is distributed across the whole width of the strap. As a result, Gates patented Tex-Hide Multi-Check Straps are lasting twice as long as the best one-band straps available.

TPA-161

Take-up Roll Coverings
Card Bands
Cone and Evener Belts
Spinning Frame Drives

Reversible Pickers

Tex-Hide Harness Straps

Tex-Hide and Vulco Loop Pickers

Tex-Hide, Vulco and Super Tex-Hide Lug Straps

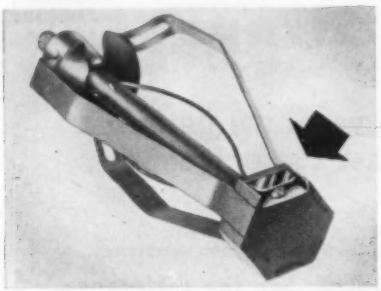
Gates Textile Accessories

For more data, write this page number on Reader-Service card. →

HOW McBRIDE COMPONENTS CAN MODERNIZE OLDER CREELS

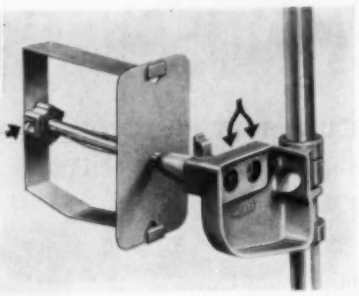
Now you can have modern, low-cost creels without the capital investment necessary to purchase complete new creel units. McBride creel components give high quality production even on older creels.

HERE ARE THE LATEST DEVELOPMENTS:



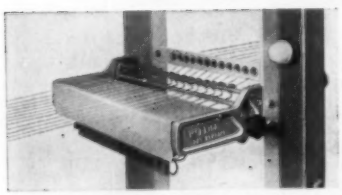
McBRIDE QUIK-CHANGE CONE HOLDER

Quik-Change Cone Holder. Fits over bowed spring spindle—accommodates complete range of cone tapers.



McBRIDE QUIK-CHANGE LARGE DIAMETER TUBE OR PIRN HOLDER

Famous McBride Swing Arm Assembly fits any ⅞" diameter upright. This assembly has recently been redesigned for even greater rigidity and strength.

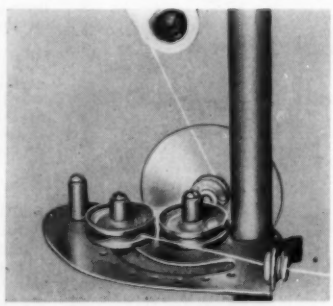


Instant-Stop. Sealed mercury switch gives instant positive action on all yarns from 12 denier nylon to tire cord, etc. Cast-out of individual ends by switch control.

Stop-motion indicating lights provide 3-way control: satisfactory operation—LIGHT OFF, broken end—LIGHT ON, drawing-in position—LIGHT BLINKING. New switching system lights only the light at bank where broken end occurs.

Stop Motion in operating position. Colored button controlling entire bank is on: 3 individual switches controlling 3 drop wires on off position for 3 inactive ends. Note cast-out ends may remain threaded through drop wires.

McBRIDE TENSION-MASTER



McBride Tension-Master. New 3 post tension provides full range of tensions. Adaptable to any diameter upright member, McBride Tension-Master permits yarn to be evenized at the beam.

Write today for details on how to adapt these components to your existing creels.

Let McBride Study Your Warping Situation. You Might Be Surprised With The Costs You Can Save, The Improved Quality In The Warps You Produce.

CREELS for every purpose, CONE HOLDERS, STOP MOTIONS, TENSION CONTROLS, WARP BEAMS, FLANGES, CARPET INSPECTION TABLES, METAL AND WOOD ROLLS. COMPLETE ENGINEERING SERVICE IS PART OF EVERY McBRIDE INSTALLATION.

McBRIDE COTTMAN AVE. & WISSINOMING ST. PHILADELPHIA 35, PENNSYLVANIA

In Canada: Hugh Williams & Co., 27 Wellington St., E. Toronto 1, Ontario

Letters From Readers

We welcome your comments. Whether you agree or disagree, with us or anybody else, we will be glad to have you air your views.

Unless you ask us not to, we will use your name and company connection when your letter is printed. If you prefer to have your opinions appear unsigned, we will respect your confidence by using only a set of initials.

Write to Editor, Round Table, TEXTILE WORLD, 201 E. Coffee St., Greenville, S. C.

FABRICOMETER NOT AVAILABLE FROM DAN RIVER MILLS

Dear Editor:

We note in the May issue of TEXTILE WORLD under Equipment & Supply News a description of the wrinkle-measuring meter, or Fabricometer. You state that Dan River Mills is making and marketing this equipment under license from Professor Lloyd Motz of Columbia University.

It is true that Professor Motz made the first model of the Fabricometer for our advertising department. But we want to make it clear that we are not licensed to sell this equipment and that all inquiries pertaining to it should be addressed to Professor Lloyd Motz, Department of Astronomy, Columbia University, New York, N. Y.

H. Y. JENNINGS
Director of Research
Dan River Mills, Inc.
Danville, Va.

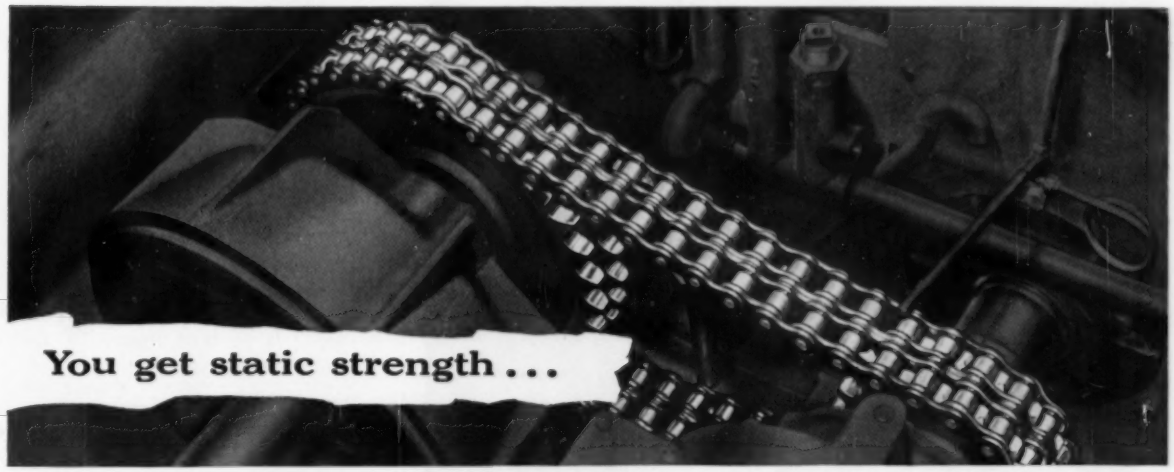
THE LARGEST MODERN FELT MILL IS AT ALICEVILLE, ALABAMA

Dear Editor:

I was much interested in your coverage of papermaker's felts in the special report appearing in the May, 1957, issue of TEXTILE WORLD. It was mentioned that, "F. C. Huyck & Son also began making felts in a new mill in Aliceville, Ala., in 1956."

Your readers will probably be interested in the fact that the plant at Aliceville is the largest fully integrated

Why tough-service drive and conveyor jobs demand LINK-BELT roller chain



RESISTANCE TO TENSILE STRESS is achieved with properly heat-treated, accurately machined side bars made of premium steel and fitted with properly hardened pins, bushings, rollers.

STRENGTH OF CHAIN IN MOTION results from such refinements as pitch-hole preparation, micro-finish of parts, special processing of side bars, pre-lubrication, rigid quality control.

THE *greater dynamic strength* found in Link-Belt precision steel roller chain is essential for long life on today's harder-working drives and conveyors. This added capacity to resist shock loads, centrifugal loads and similar stresses is achieved only because Link-Belt adds refinements in manufacture.

These include lock-type bushings, shot-peened rollers, pre-stressing, closer heat-treat control. The result: a precision chain that takes stresses in stride . . . provides smoother, more efficient performance that measurably outlasts ordinary roller chain — reduces costs.

For full data on Link-Belt roller chain, see your Link-Belt office or authorized stock-carrying distributor.

LINK-BELT

ROLLER CHAIN & SPROCKETS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville (Sydney), N.S.W.; South Africa, Springs. Representatives Throughout the World. 14.422

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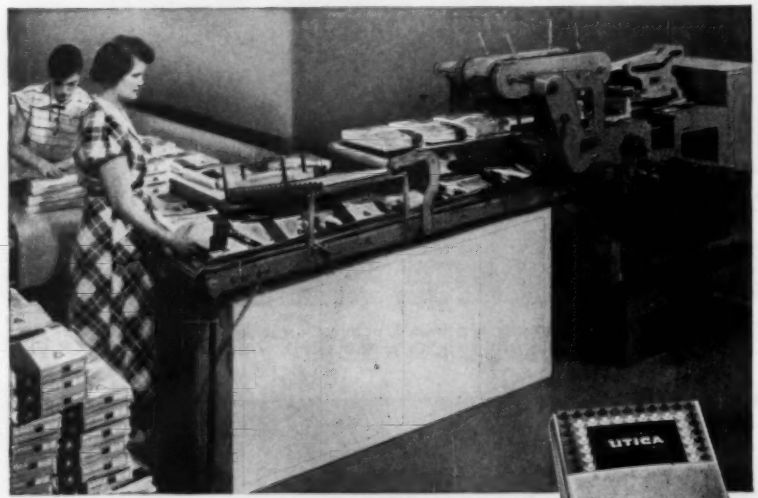
Automatic Packaging saves more...sells more, is better protection for J. P. STEVENS



For over five years of volume production, Utica-Mohawk sheets and pillow cases have been better wrapped on a Hayssen; neat, tight, clean, appealing from mill to customer.

● Your Distributors, your Dealers, your Customers demand better protection and Sales-Appeal! J. P. Stevens, like hundreds of others across the country and around the world have found they can meet these demands at less cost with Hayssen Wrapping.

We can save you money over your present wrapping system, too, and give you added protection and sales appeal.

Let our experienced packaging engineers help you with your packaging problems. WRITE US TODAY!

HAYSSEN

MANUFACTURING COMPANY • Dept. TW-8 • SHEBOYGAN, WIS.

first in Automatic Packaging Since 1910

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Los Angeles • Minneapolis • New York • Philadelphia • St. Louis • San Francisco • Montreal • Toronto

modern felt mill in the world. The building contains 200,000 sq. ft. of floor space. It is fully air conditioned. This plant is one of the few in the South with special dropped ceilings that eliminate any possibility of felt damage due to condensation.

F. A. Soderberg
Vice President
F. C. Huyck & Sons
Rennsselaer, N. Y.

SUPERVISORS AND DOCTORS HAVE MUCH IN COMMON

Dear Editor:

Sometimes I like to compare a supervisor to a doctor. Part of a doctor's job is to treat injuries of the body; part of a supervisor's job is to treat injuries (grievances) of the mind.

The doctor has patients with accidental injuries, and he heals them to the best of his ability. The supervisor must often try to heal accidental mental injuries of his employees.

Sometimes the doctor has patients who come to him with injuries that have been self-inflicted; it is still his job to heal them. Employees come to the supervisor with self-inflicted or imaginary mental injuries, and he must try to heal them.

There is another type of mental injury inflicted by the supervisor himself. These injuries are the worst kind because the one causing the injury is the only one who can heal it. It may be just an imaginary grievance, but it is very real to the patient.

If the supervisor would look upon the human-relations part of his job as the doctor does on his profession, there would be fewer mental injuries, grievances, gripes, and misunderstandings on the job.

Vernon J. Livingstone
Gaffney, S. C.

LOOMFIXERS ARE THE KEY MEN

Dear Editor:

I'd like to mention one thing that seems to be overlooked when the present ills of the textile industry are discussed. The most critical phase of textile manufacture is in weaving, and the key man in the weave room is the loomfixer.

But in many mills the importance of the loomfixer and his work is minimized. It all began back in World War II. Production took precedence over everything else, and the weaver came to be regarded as the most important personage in the mill. Gradu-

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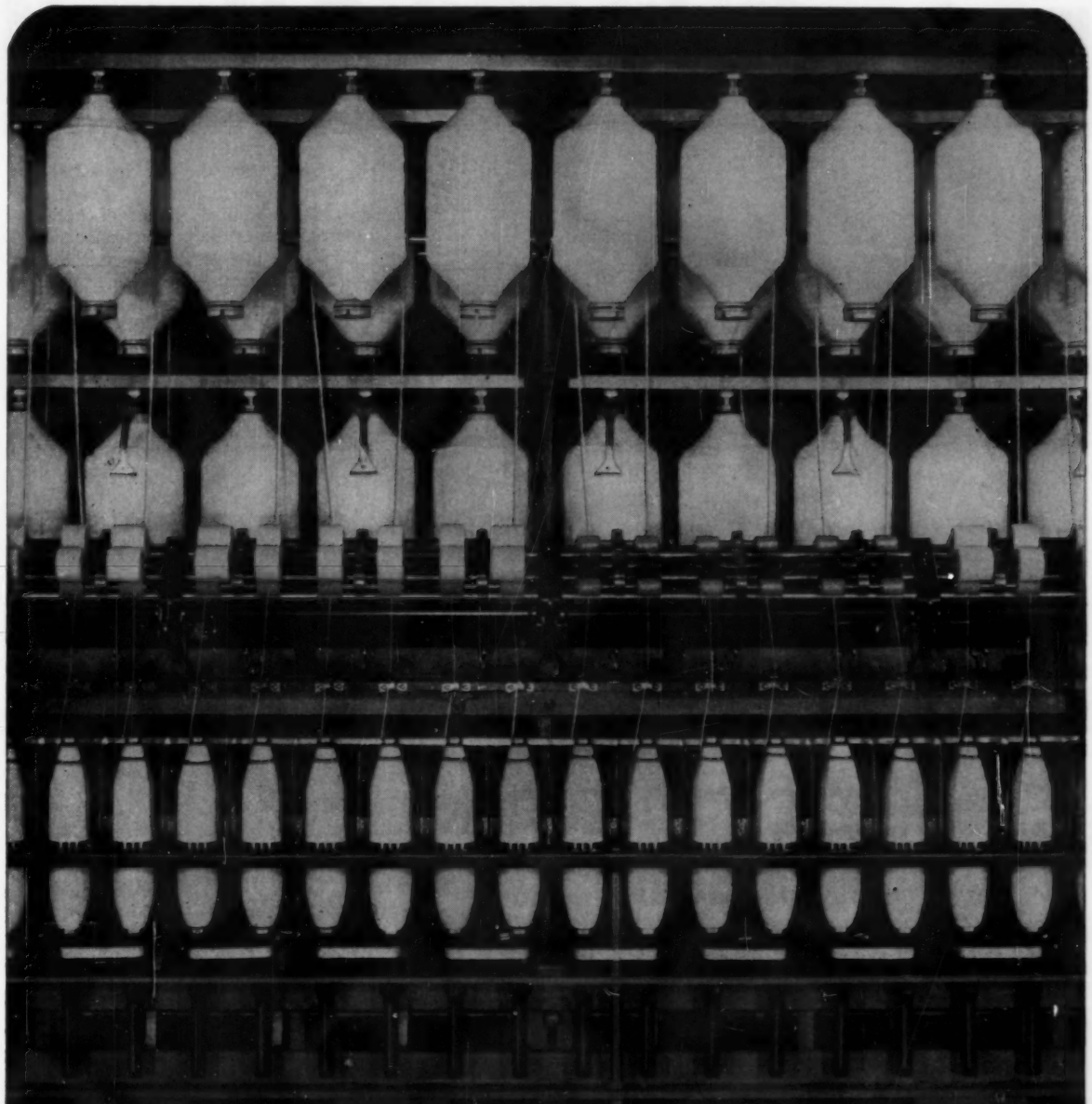

BIG PACKAGE ROBERTS SPINNING

ALL-NEW—ALL BALL BEARING ROBERTS M-1 SPINNING FRAME

To see it in action or for a trial frame in your own mill, please write direct to...

ROBERTS COMPANY
SANFORD, NORTH CAROLINA

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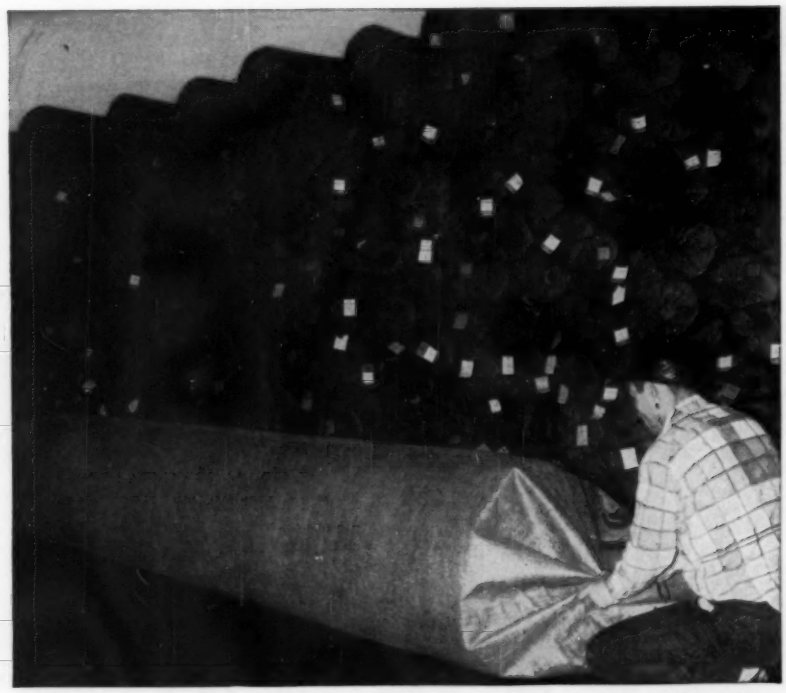
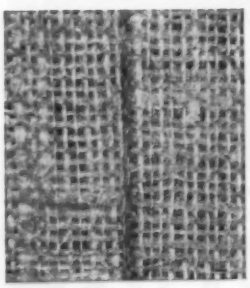


SEAL OUT DIRT . . . SEAL OUT WATER . . .

Give your carpets COMPLETE PROTECTION with Bemis Laminated Carpet Covers



The strong, flat cemented seam is the key to complete protection.

Bemis ROL-RAP Laminated Carpet Covers have cemented *seams*, so there are no needle holes to admit damaging dirt and water. The seams are flat . . . and they are much stronger (by tensile strength test) than conventional seams.

The cost? No more than ordinary covers.

You'll save, too, on labor, time and storage space. And the covers fit so snugly that the roll can't telescope and damage the tuft and pile.

Write or wire for *complete* information on Bemis ROL-RAP Laminated Carpet Covers.

BEMIS PRODUCTS FOR THE CARPET AND TEXTILE INDUSTRY

Laminated Sheets • Laminated Yardage • Laminated Tubing • Tite-Fit Tubing
Paper Rug Covers • Burlap Piece Goods • Wire Ties and Tying Equipment

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ally, the loomfixers assumed some of the weavers' chores so that they could concentrate more on getting out production. Loomfixers who had been regarded as skilled specialists found themselves in the position of catering to weavers.

Then, too, the gap in wages has been closing constantly. Every time a raise is granted, the pay of the weavers and even the inexperienced sweepers and others comes closer to that of the loomfixer. These conditions are driving many of the most experienced loomfixers to other jobs.

The new loomfixers lack the experience and know-how of the old-timers. Then, too, the lack of prestige on the fixer's job discourages many capable men from seeking such jobs. As a result, inferior repair and maintenance are causing high seconds and high costs.

What is needed to correct the situation is to again make the job of fixing looms a desirable occupation. Relieve the loomfixer of many of the time-consuming chores that require little skill, and then pay him in proportion to the skill, experience, and ability required to keep the looms in top-notch condition.

O. J. Ducharme

Pascoag, R. I.

TIRE CORD PRODUCTION IS UNDERESTIMATED

Dear Editor:

In your article, "Tire Cord Use Is Up—But Trouble is Brewing," on page 19 of the June, 1957, issue of Textile World, you state that tire cord will be used this year at the rate of about 139,000,000 lbs. per year and chafer fabric at the rate of 2,300,000 lbs. per year. Actual tire-cord production in the United States last year amounted to 405,000,000 lbs.

R. M. Sawyer

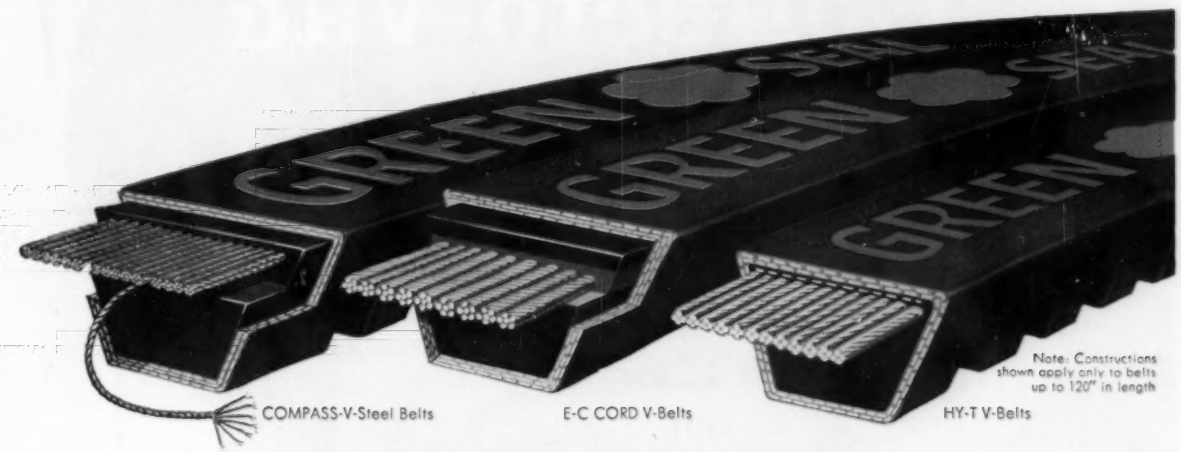
Firestone Textiles
Akron, Ohio.

New Man-Made-Fiber Table

The latest revision of TEXTILE WORLD'S Man-Made-Fiber Table be published next month.

Watch for it in
September TEXTILE WORLD

Now—V-Belts with the Green Seal solve the major multiple drive problem



The Green Seal stands for true dimensional stability in V-belts. And with Green Seal dimensionally stable belts you can be sure that matched sets are truly matched and will stay matched—that mismatching (the biggest problem in belting multiple drives successfully) is a thing of the past.

The key to dimensional stability lies in the tension members of the belt. For many years, steel cables as developed by Goodyear were the only length stable load carriers, but now they have been joined by synthetic cords, thanks to the amazing Triple-Tempered 3-T process.

The 3-T process is an exclusive method of tempering the cord with Tension, Temperature and Time for maximum strength and minimum change in dimensions. This assures no change in length during storage plus greatly increased shock- and stretch-resistance on the drive.

The end result is smoother, longer-running teams of belts that give you maximum, trouble-free, horsepower hours at minimum cost. What better reason for specifying V-belts with the Green Seal?

DIMENSIONALLY STABLE V-BELTS with the GREEN SEAL by GOODYEAR

THE GREATEST NAME IN RUBBER

The Goodyear Tire & Rubber Company, Industrial Products Division, Dept. 794, Akron 16, Ohio

Please send me more information about how V-Belts with the Green Seal solve the major problem in belting multiple V-belt drives.

Name_____

Company_____

Street Address_____

City_____ Zone_____ State_____

Compass, E-C Cord, Hy-T, Green Seal- T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

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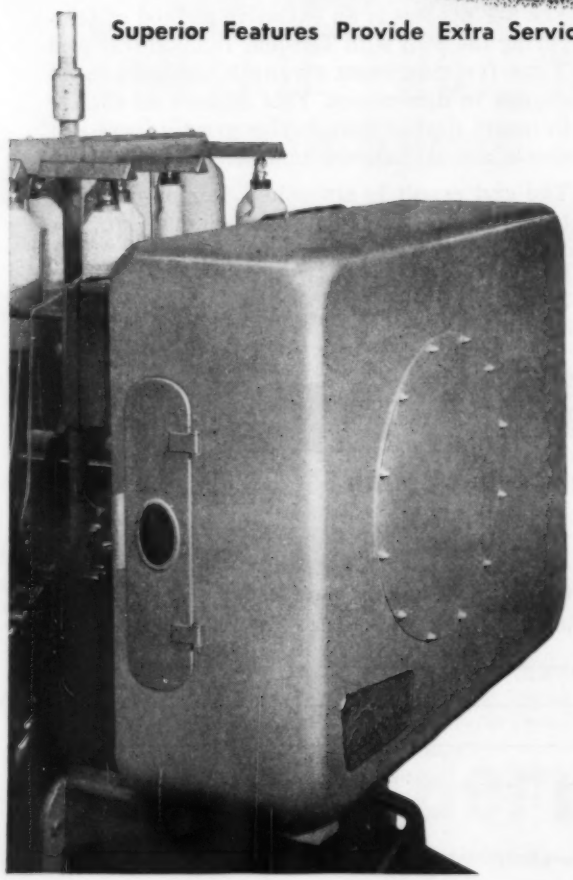
A New Product's Dynamic Record

Why The New Bahnson Collecto-Vac Was Purchased For 1,364,696 Spindles In Less Than Two Years

Superior Features Provide Extra Service For Collecting Broken Ends, Flying Lint



■ **ANODIZED ALUMINUM FLUTES**
No warping, cracking, or static build-up

■ **SCROLL TYPE FAN**
High velocity downward air discharge disperses motor alley heat or can be used to clean beneath frame; also facilitates addition of Central Heat Removal System.

■ **CONVENIENT ACCESS FOR MAINTENANCE**
No need to remove frame switches from unit to reach fan and motor.

■ **TOP QUALITY CONSTRUCTION**
Rugged steel collection box smoothly finished in baked enamel. Anodized aluminum flutes offered in choice of colors. Double capacity unit for serving two frames.

■ **CENTRAL HEAT REMOVAL SYSTEM**
Can be added to existing Collecto-Vac units without conversion. Removes heat from collection unit, frame motor, motor alley.

Bahnson CHR System obsoletes earlier concepts of central air handling.

Get detailed information on the Bahnson Collecto-Vac and Central Heat Removal System. Write us today!

Bahnson COMPANY
WINSTON-SALEM, N. C.

AIR CONDITIONING • HUMIDIFICATION
VACUUM COLLECTION • CLEANING • CREELS

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WHITIN Pacemaker* TWISTERS

Consistently Ahead in Production, Performance and Quality

Whitin Pacemaker Twisters have established unsurpassed performance records for their high production, yarn quality, minimum maintenance and operating costs. For cotton and spun synthetic yarns, they are available in 3½" - 6" gauge with 2½" - 4½" rings and with traverses up to 11" depending on yarn and mill requirements. Their notable features are:

- **Front bottom roll arrangement to provide a yarn path that is in almost vertical line from bottom of front roll to the guide.**
- **Laminated bakelite gears meshing with metal gears in the head end, for noise reduction and long wear.**
- **Spring counterbalanced ring rail.**
- **Spring weighted anti-friction tape tension pulleys.**

ALSO AVAILABLE

- **Steel pulleys on continuous drive shaft for spindle drive.**
- **Slotted ring rails for full length stationary separator blades.**
- **Stationary guide rod behind spindles for supporting ring rail traversing mechanism which prevents contamination of yarn when ends are down.**
- **Ball bearing or roller bearing spindles.**

Write today for our folder giving detailed information

Whitin MACHINE WORKS

WHITINSVILLE, MASS.

CHARLOTTE, N. C. • GREENSBORO, N. C. • ATLANTA, GA. • SPARTANBURG, S. C. • DEXTER, ME.

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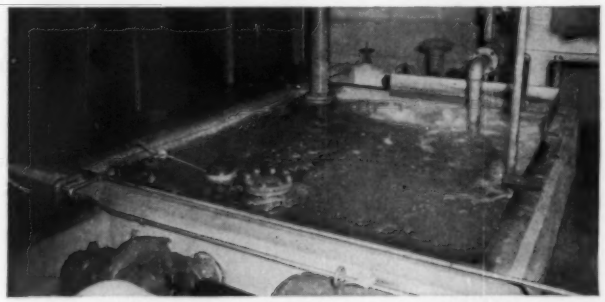
Why Owens-Corning Fiberglas chose

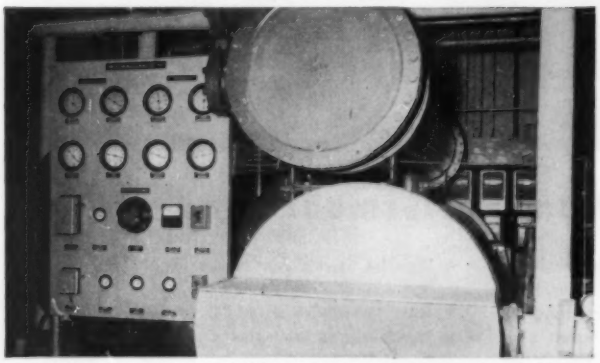
AMCO CENTRAL STATION AIR CONDITIONING

at its Huntingdon, Pa. Plant

Air distribution ducts and zone control atomizers in twisting room at Owens-Corning Fiberglas, Huntingdon, Pa. Widely spaced grille bars and snap-on latches allow quick, easy cleaning and maintenance.



Chilled water reservoir receives excess water from air washers, then recirculates water through chillers as needed.



Refrigeration equipment (chiller at bottom, condenser at top) with indicator and control panel designed and installed by AMCO.

If you want the facts about textile mill air conditioning — central station, unit dry-duct or ductless evaporative cooling — with the advantages and limitations of each system detailed, write for Amco's booklet "Air Conditioning for the Textile Industry". Or better still, ask Amco to recommend the system best suited to your needs. No obligation.

CLOSE-CONTROL HUMIDIFICATION

Owens-Corning, to assure greater operating efficiency throughout its mill, installed an Amco dual (split) system. This system calls for a central station unit augmented by room atomizers which permit the different manufacturing areas to be controlled *independently*, at any point, between 40% and 65% relative humidity.

CLEAN, CONDITIONED AIR

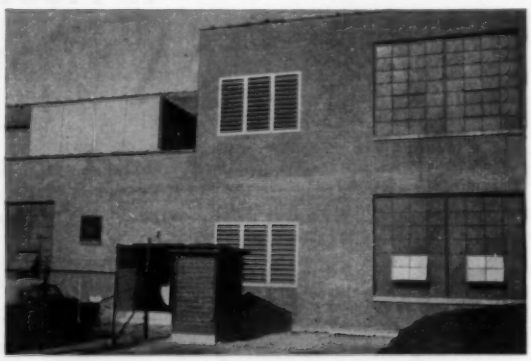
Fresh and recirculated air is thoroughly cleaned and conditioned with the right amount of moisture before distribution by the duct system. Room atomizers raise the moisture content to the level desired for each room, thus assuring ideal conditions for the particular manufacturing process.

CONSTANT YEAR-ROUND TEMPERATURE

Air passed through chilled water spray helps to maintain a year-round 78° F temperature. A total of 550 tons refrigeration capacity keeps work areas independent of outside weather.

ECONOMICAL OPERATION

A washer bypass takes care of below-maximum heat loads, saving on steam costs. This Amco system also uses steam coils to heat air for supplementary warmth when the weather is extremely cold or when machinery loads are very light.



Exterior view of central station apparatus house at Owens-Corning Fiberglas Corp.

AMERICAN MOISTENING COMPANY, Cleveland, N. C. *Branches:* Atlanta • Boston • Camden • Providence • Toronto

FACTS

about

NEW DEPARTURE BALL BEARINGS

NOW A

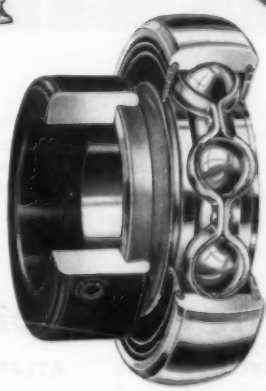
NEW DEPARTURE IN PILLOW BLOCKS

- Clean, rigid, compact design.
- Free of any lubricating fixtures.
- New Departure ball bearings sealed and lubricated-for-life.
- Pillow Blocks easily mounted without special tools.
- Only high capacity precision ball bearings used.
- Accommodates any misalignment.
- 31 shaft sizes, ½" through 2 7/16".
- Interchangeable with most makes.

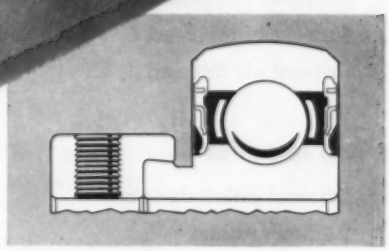
Send for Catalog PBC for complete details.

GREASE SEALED IN
DIRT SEALED OUT
with
FAMOUS SENTRI-SEAL

ON GUARD AGAINST DIRT



New Departure Pillow Blocks employ the performance-proved New Departure Type AE Adapter ball bearings with spherical O.D. for alignability and steel-reinforced Sentri-Seals for long life protection against dirt or grease leakage.



The bearings are easily applied to the shafting and are positively locked in position with an eccentric cam locking collar and set screw.

BALL BEARINGS MAKE GOOD PRODUCTS BETTER

NEW DEPARTURE • DIVISION OF GENERAL MOTORS • BRISTOL, CONN.

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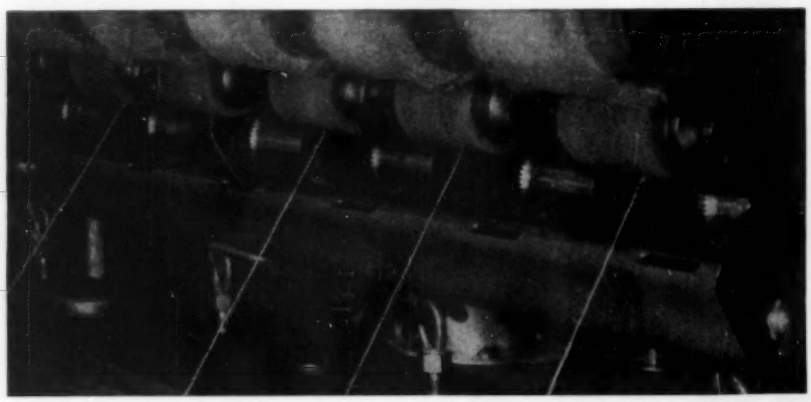
SpinSaVac® for better spinning



NEAT
POWERFUL
EFFICIENT

Clearing Conduit

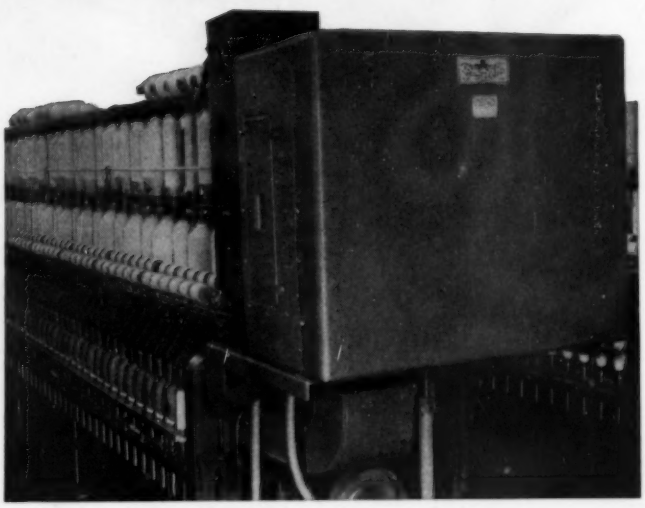
Pear shape makes piecing easy
Strong, smooth, anti-static
Conveniently mounted

Unit Collection Cabinet

Ample volume
Flush surfaces
Rounded edges and corners
Lint easily removed
Exhaust air diffused

Vacuum Impeller

Efficient airfoil design
Higher vacuum



Further details plus an interesting analysis of heat and humidity conditions with SpinSaVac Unit, SpinSaVac Central and SpinSaVac Material Recovery Systems may be found in our bulletin F55.

Parks-Cramer Company

FITCHBURG, MASS. CHARLOTTE, N. C. ATLANTA, GA.

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406

TEXTILE BUSINESS

Textile World

AUGUST • 1957

THIS MONTH'S HIGHLIGHTS

Japan Observes Quotas

•

Auto Output Zooms Again

•

Burlington Expands Overseas

•

Cotton Leads in Auto Uses

•

Profits Drop for British Knitters

•

Mill Sales, Profits Down

Wool-Fabric Tariffs Rise

The trigger point for wool-fabric imports was reached late last month.

The 14-million-lbs. quota was reached ahead of estimates, catching importers off-balance as many scrambled to beat the higher 45% duty now in effect for the balance of the year.

Japan Observes Quotas – But It Takes Policing

TOKYO, JAPAN—Japan expects to fill her textile-exports quota to the U. S. before the year is out.

So far, shipments have been below the ceiling set in the "voluntary-quota" agreements announced in January. But that's only a breathing spell, caused by industry adjustments to meet U. S. demands.

Take velveteens.

Last year, 2-million sq. yds. were shipped to the U. S. in the first four months of the year. The quota for all of 1957 is 2.5-million sq. yds. But in the first four months of this year, not a yard of velveteen was exported to the U. S. because of the time required to adjust prices.

One of the U. S. demands is that Japan not undercut domestic mills, and velveteen shipments were held up until the pricing structure was cleared up.

It's clear now, and export of velveteens has been resumed. Before the end of the year, Japanese mills expect to be shipping velveteens at the full quota rate.

•

Shipments of most other constructions got off to a better start, but in general the pace did not come up to quota limits.

Even ginghams fell short. In spite of an annual quota of 35-million sq. yds., only about 8-million sq. yds. were shipped in the first four months—an annual rate of only 24-million sq. yds. Last year in the first four months, 30-million sq. yds. were exported.

Japan is leaning over backwards to live up to the quota agreements.

In spite of widespread industry dissatisfaction, the question of limitations has not been brought up in the Diet (parliament). Many U. S. officials thought it would.

•

The Japanese government has made these moves to guard against circumvention of the agreements:

• Placed controls on part-cotton garments.

Japan historically classes a fabric by cloth count, the U. S. by the fiber of chief value in the cloth. The new controls class a fabric by the percentage of cotton determined by weight.

• Clamped safeguards on shipments through a third country.

The U. S. already requires a certificate of origin on goods coming from Hong Kong, the most logical "third country" for japanese exports.

But a few exporters have tried to send goods to the U. S. through Panama, Mexico, Curaco, and The Netherlands. And a

few have tried shipping goods marked for transshipment to another country to New York and unloading them there.

•

To stop such attempts at evasion of the quota system, the Japanese government now—

—Requires exporters to get their goods to the declared port by a certain time

—Requires exporters to show evidence afterwards that the goods did reach the declared port

—Checks closely on what goods are going where

If an exporter does not live up to the rules, he is denied export licenses in the future.

—Has substantially raised the price of velveteens and brought the price levels of several other constructions more in line with U. S. prices.

•

Nevertheless, Japan's observance of the quota system is grudging.

As some Americans put it, they're living up to the letter of the system but not to the spirit of it.

They're quick to take advantage of any loophole that pops up. Wherever a point is to their advantage, they insist on interpreting the quota agreements in the strictest legal sense. Many U. S. officials now wish that the agreements had been spelled out in greater detail.

Take gingham.

There's been more controversy over the definition of gingham than on any other point.

The U. S. says the gingham classification includes striped gingham. Japan insists that striped gingham is not "original gingham" and should be classed as yarn-dyed fabric.

What Japan hopes to get out of the squabble is an extra 3.5-million sq. yds. of striped-gingham exports, in addition to the 35-million sq. yds. of "original gingham" exports.

•

Japanese mills are trying to find new markets and to expand present markets to make up for the loss of exports to the U. S.

Velveteen exporters in particular have made a strong bid for business in Red China and South America. Neither they nor producers of other types of goods have had much success so far.

But diversification of textile products should help sooner or later in the drive for new markets, they think. About 30% of Japan's velveteen weavers have now branched out into poplins and sateens. And about the same percentage of gingham weavers have added yarn-dyed fabrics for markets in Southeast Asia and Africa.

But the U. S. and Europe are still prime targets for Japanese exports. The markets are too lush and the money too sound for exporters to give up easily.

There's a strong tendency to switch to such constructions as high-quality broadcloths and printed fabrics where less goods will net more money and it's a little easier to stick with the quotas.

The only trouble is that in such categories they step against stiff Western competition.

Sales and Profits Down In First Quarter

Complete returns on first-quarter operations for the textile industry show a decline in sales and profit from a year ago and a sharper drop from the last quarter of 1956 to the first quarter of 1957.

A report on the first quarter by the Federal Trade Commission and Securities & Exchange Commission shows:

- **First-quarter sales** this year were $3,260-million, down 2% from the $3,334-million in the first quarter of 1956 and down 9% from the $3,484-million in the last quarter of 1956.
- **Net profit before Federal income taxes** was $150-million in the first 1957 quarter, down 25% from the $199-million in the first 1956 quarter and down 17% from the $180-million in the last 1956 quarter.
- **Net profit after taxes** was $66-million in the first 1957 quarter, down 20% from the $93-million in the first 1956 quarter and down 31% from the $96-million in the last 1956 quarter.

•

The change in net profit after taxes for textile-mill products compares with changes in other soft-goods manufacturing industries as follows:

Industry	Change
Textile	—31
Food	—15
Tobacco	—15
Apparel	—33
Paper	— 9
Printing	+26
Chemical	0
Petroleum refining	— 3
Petroleum and coal products	—50
Rubber products	— 9
Leather	0
All	— 6

Rayon and Acetate Down

Rayon and acetate shipments in the first half of this year were down 2% from the same period last year.

Shipments totaled 562.6-million lbs. this year, compared with 575.1-million lbs. last year, *Textile Organon* reports.

Auto Output Zooms Again

Auto-makers are caught in another siege of optimism.

Surging midsummer sales have blown the dust off of earlier 1957 predictions, and producers now think that their hopes for 6.2-million cars are within reach.

For the second year in a row, the traditional sales pattern of spring-surge-summer-slump has been reversed.

After getting off to a good start early this year, sales dipped in the spring. Producers, not yet convinced that the traditional sales pattern has changed for good, read the poor spring sales as a sign of a relatively poor car year.

But summer deliveries roared along in a manner reminiscent of record 1955. If the third quarter, also normally a slow period, takes care of the 1,290,000 cars scheduled, 1957 will displace 1953 as the third biggest sales year in auto history.

●

Mills doing business with one or another auto manufacturer may see further swings and counterswings in fabric procurement late this year and next year.

• **Ford** is expected to regain the top sales spot this year for the first time since Chevrolet took over in 1936. And Edsel, Ford's new product, is expected to reach sales of 55,000.

• **General Motors,** which sat still in the face of drastic restyling by its competitors, is set for a "crash program of sweeping changes" in its 1958 models. It expects to regain its position of filling half or more of the market.

• **Chrysler Corp.** turned out its millionth 1957 car on July 3, and Plymouth has firmly taken over third sales place from Buick. But Chrysler is planning few changes in 1958. Whether it can hold the sales position it reached in 1957 in the face of major style changes by Ford and GM is a moot question.

●

Sales of foreign-made cars, which use no fabric or tire cord made by U. S. mills, continue to zoom.

Last year they accounted for less than 2% of the total U. S. market—108,000 cars valued at $127-million. But that was nearly twice as many as were sold in 1955.

This year, 73,000 foreign-made cars came in during the first four months. That's more than double the rate in the same period of 1956. And another increase is expected in 1958.

The German Volkswagen alone may hit sales of 75,000 in the U. S. this year. That's about the same volume as American Motors' bread-and-butter Rambler and perhaps more than Studebaker-Packard's total volume.

Better service facilities for foreign cars in the U. S. are shaping up.

American Motors is now marketing the British Metropolitan, Studebaker-Packard is handling the Mercedes-Benz, and Ford is selling several models (Anglia, Consul, Zephyr, Zodiac) built by its 55%-owned subsidiary in England. General Motors has announced that it will handle U. S. sales of its British-built Vauxhall Victor and its German-built Opel Rekord.

If the "big car" craze in the U. S. swings to a "little car" craze, as many observers think probable, the impact may be felt by mills on automotive fabrics and possibly tire cord.

Bumper Wool Clip Expected Next Year

MELBOURNE, AUSTRALIA — The big wool clip of the current season in Australia and New Zealand may be topped next year.

Rains have relieved most drought areas, and good pastures are expected. With wool prices high and meat prices low, graziers are marketing fewer lambs and sheep. It's more profitable under current conditions to hold them for wool.

•

This year's clip in New Zealand brought the second highest volume of income in history—81.5-million pounds sterling. That's 15.6-million pounds above last year.

Only the Korean boom year, when the clip brought 107-million pounds, was higher.

•

Wool experts in Australia expect 1957-58 prices to hold at about the average price level for this year's clip.

They expect world wool consumption in 1957 to exceed that in 1956, but they are concerned by the fact that the world rate of increase in wool consumption is slowing down.

Wool purchases on direct U. S. accounts are down 25% this year from last year, but purchases by Italy and Japan have increased.

Some increase by U. S. buyers is expected next year, but a greater percentage increase is anticipated from Japan and Iron-Curtain countries.

World Tariffs Won't Be Policed

There will not be a policing body for international tariffs this year.

The House Ways and Means Committee has officially shelved the bill for U. S. membership in OTC (Organization for Trade Cooperation).

Last year when the committee held hearings, a majority favored OTC. But this time even members supporting OTC thought that it didn't stand enough of a chance of passage to bring it up before Congress.

TEXTILE BUSINESS

Cotton Surplus Drops

The cotton surplus will be sharply reduced this year as a result of low acreage planted and booming exports.

Planting is down from last year's 16.8-million acres to 14.2-million, the U. S. Dept. of Agriculture estimates.

A yield of 11-million to 12-million bales is expected, down from 13.3-million bales last year.

Exports are expected to reduce last year's 14.5-million-bale carryover to 11-million or 11.5-million bales by the time 1957 cotton hits the market.

With the small 1957 crop and the same rate of exports continued for another year, the cotton surplus should drop another two or three million bales by the fall of 1958.

Armed Forces Will Reduce Huge Textile Inventories

The Armed Forces will sell $250-million worth more of clothing and other textile items than they'll buy in the next two years.

The merger of procurement agencies of different Service branches into a central agency will make the reduction of inventories possible, Maj.-Gen. Webster Anderson says.

The present 38 depots will be reduced to 12, and about 10-million sq. ft. of floor space will be released.

Further reduction of inventory, in addition to the $250-million now planned, may reach $400-million to $500-million in the next few years.

Japan and Australia Draw British Mills' Protest

British cotton and rayon weavers are protesting the trade agreement between Australia and Japan.

Australia has been buying about 80-million sq. yds. of **British cotton goods a year. Lancashire mills estimate** that Japan will now get 60% of that trade.

Burlington Industries Expands Overseas Operations

BURLINGTON'S WARREN and MYERS. Demand for women's hosiery in South Africa lures Burlington to Cape Town.

Latest addition to Burlington Industries' overseas operations is a new hosiery plant located near Cape Town, South Africa, scheduled to begin production in early 1958.

Titled Burlington Hosiery Mills (S.A.) Ltd., the new operation is being undertaken jointly with Weil and Aschheim Ltd., leading mercantile firm of Johannesburg.

Burlington will bring to the joint venture outstanding technical know-how in hosiery manufacturing, and Weil and Aschheim will contribute established distribution channels and merchandising experience in that part of the world.

A completely modern, fully integrated operation will be housed in a one-story structure covering upwards of 40,000 square feet.

It will employ more than 200 workers and will have equipment for making full-fashioned and seamless hosiery in both conventional and stretch styles, plus complete dyeing and finishing facilities.

The same methods and techniques employed in making Bur-Mil Cameo brand hosiery will be employed.

Plans call for a separate organization known as Burlington Hosiery Sales (S.A.) Ltd. to handle sales and distribution throughout the Union of South Africa and in other areas of Africa. Weil and Aschheim has served for several years as distributor in South Africa for Bur-Mill Cameo hosiery.

●

The new South African operation comes within the framework of Burlington International, the member company of Burlington Industries that operates manufacturing and sales organizations in foreign countries. Currently these operations stretch into Canada, Mexico, Colombia, and Venezuela.

As it has in most international operations, Burlington entered the South African venture on something approaching a 50-50 basis.

A fast-growing South African market (the area has been the largest importer of American full-fashioned stockings for several years) prompted Weil and Aschheim to approach Burlington with

the idea of establishing manufacturing facilities there.

Already well established as a merchandising operation in various soft-goods lines, Weil and Aschheim was interested in venturing into manufacturing to help supply a promising market.

This is essentially the pattern followed in the establishment of all Burlington overseas operations: a partnership with local interests that have merchandising know-how and channels of distribution plus a thorough knowledge of local conditions and customs.

Out of a total Burlington family of 101 plants employing 49,000 people, International embraces eight overseas plants with 3,500 employees. Although relatively small, International nevertheless turns a tidy profit.

According to the company's annual report for the year ending September 29, 1956, Burlington Industries' earnings after taxes totaled $15,264,780, plus nonrecurring capital gains of $5,518,030. International's earnings amounted to $971,460.

•

Top brass in International includes President Charles F. Myers, Jr., and Vice President Leicester Warren.

Myers, who fills the dual role of treasurer and a director of the parent Burlington Industries' organization, is a personable Harvard Business School alumnus who left a vice president's post at Wachovia Bank and Trust Co. to join Burlington 10 years ago. He took over the reins of International in 1950 and has guided its steady growth since then.

Warren's background is in the field of accounting. A Harvard College and Columbia Business School graduate, he joined Burlington in 1947 and has been with International since 1948. He was named vice president in 1955.

Both men keep abreast of complex currency-exchange matters inherent in foreign operations. Both attempt to keep constantly up to date on changing political tides that sweep recurrently over many nations "south of the border."

In addition, there is a further special qualification that seems necessary for success in international dealings. The Latins would call it *simpatico*. It involves a sympathetic understanding of and interest in the way of life in the foreign country concerned.

Coordinating overseas operations is never all smooth sailing. An overnight coup d'etat, a revolution, or even an orderly change in government can create untold problems in currency exchange, import regulations, and sources of supply. That's why partnership with local owners is almost essential to these operations.

Besides part of the capital, Burlington supplies manufacturing know-how and some key operating personnel. Efforts are made to use local personnel to as great an extent as possible; for example, in one overseas plant with 800 employees only two are from home operations.

•

Products from Burlington's overseas plants are varied. Textiles Panamericanos, Medellin, Colombia, produces woven synthetics fabrics. Burlington Mills Hosiery Company of Canada Ltd. makes women's full-fashioned and seamless hosiery, while other mills in Canada produce ribbons, tapes, and tricot fabrics.

Textiles Morelos in Mexico produces cotton and synthetics fabrics, the Venezuelan plant synthetics fabrics.

Although textiles is an ancient industry, synthetics textiles,

American Viscose Stock Takes Upward Swing

Rumors flew last month in financial circles about American Viscose Corp. One was that Viscose and Monsanto would spin off Chemstrand as an independent corporation, another that Viscose and Monsanto would merge.

All the rumors were said to be without foundation by Frank H. Reichel, Viscose chairman of the board.

•

The action of the Viscose stock on the stock market might have caused the rumors, or the rumors might have caused the stock's rise.

In any case, the stock far outperformed textile-mill shares and the shares of other fiber producers.

Issue	1957 low	Mid-July
American Viscose ...	30⅞	40¾
American Enka	19	19¼
Beaunit	16⅞	17½
Burlington	11	12¼
Celanese	14¾	16
Cone	12⅜	12⅝
Industrial Rayon	27¼	27½

•

Chemstrand moved into profitable operation last year and paid a good dividend to Viscose and Monsanto, 50-50 owners. And capacity of the Chemstrand plant at Decatur, Ala., is being enlarged 50%.

Even if no spin-off or merger is in the offing, most stock-market experts consider Viscose a good investment.

The latest report of *The Value Line*, published by Arnold Bernhard & Co., rates Viscose stock as "Fairly Priced" at 40 and estimates that the stock has an appreciation potential of 63% by the 1960-62 period.

Brazil Raises Subsidy

RIO de JANEIRO, BRAZIL—The Brazilian government has increased its subsidy on textile goods for export almost 50%.

The subsidy rate is now 67 cruzeiros per dollar instead of 45.

Purpose: to help mills regain some of the export market they had until a few years ago and to raise mill profits so that they can modernize.

particularly in South America, are very new; and knowledge gained through partnership with Burlington has benefited owners of overseas mills.

Advice on styles and fibers popular in the U.S. is passed to them by Burlington; and problems in manufacture are worked out through an interchange of information between the foreign mills, Burlington's U.S. mills, and the technical laboratories in Greensboro.

•

Burlington has experienced its greatest period of growth in the U.S. in the last six years, and during that time its overseas operations have grown apace. They have now reached substantial size since their beginning in 1944.

International officials are continually alert to the potentials of combining American know-how with foreign capital plus local merchandising and distribution experience. **They're keeping a sharp eye on South America, Africa, and the Asiatic countries where natural resources are still largely untapped.**

Last year Leicester Warren and Jackson Spears, a Burlington Industries' vice president, made a swing through Brazil, Argentina, Chile, and Peru to investigate prospects for further expansion and to find places where Burlington know-how could be put to profitable use.

As resources in these countries and in underdeveloped countries in the Eastern Hemisphere are utilized, standards of living will be raised and greater demands for quality textile goods will be created. Burlington intends to be in on the ground floor when such demands develop.

Cotton and Vinyl Plastic Dominate Auto Uses

Use of automotive fabrics or substitute materials took these swings from 1950 to 1955:

- Cotton rose from 36% to 43% of the total.
- Vinyl gained from 6% to 36%.
- Rayon dropped from 12% to 9%.
- Nylon increased from 5% to 6%.
- Wool dropped from 38% to 1%.
- Leather held steady at 3%.

All other fibers or materials each represented 1% or less of the total use.

A total of 125,836,004 pounds of fabric or substitute material was used in 1955 for upholstery, sidewalls, headlining, and foundation sheeting—an average of 18.3 lbs. per car.

•

Changes expected in the near future by the U.S. Dept of Agriculture include:

Cotton will about hold its present volume or increase slightly.

Wool will not reclaim any uses but should continue at about its present volume.

Nylon will increase substantially, primarily as an upholstery

1958 Summer-Suit Fabrics Will Make Only Minor Shifts

Shifts in men's-wear fabrics for the 1958 spring and summer seasons will not be strong enough to have much impact on mills.

A survey of 404 retailers by the Clothing Manufacturers Assn. shows that:

- **Wash-and-wear fabrics** will increase sharply. This year they took about 10% of the summer-suit market. Next year they'll have 15% of it.

Most of the loss will be sustained by rayon suits in low-cost lines. Retailers have seen no tendency for the wash-and-wears to cut into higher-priced suits.

- **Washable suits** that require pressing will be of little importance next year.
- **Dacron-wool blends**, which had about 34% of the summer-suit market this year, will hold their position as the dominant fabrics in summer-weight suits.
- **All-worsted suits** will remain relatively steady: 11% of the market in 1958, compared with 12% this year.

European Common Market Draws One Step Nearer

The Common Market treaty for Western Europe was ratified last month by France in a 342 to 239 vote.

West Germany was the first participant to ratify it and France the second.

Action is still pending by Italy, The Netherlands, Belgium, and Luxembourg.

The treaty is to become effective Jan. 1, 1958, but removal of trade barriers between the participating countries will be gradual so that producers can change over to the new system without undue hardship.

Britain is considering cooperating in the Common Market, but textile interests are insisting on several guarantees before a firm commitment is made.

material in medium-price and low-price cars.

Vinyl probably has seen its peak as a visible-trim material. Its use is expected to decline.

For British Hosiery Mills Market Rises, Profits Drop

LONDON, ENGLAND—The long-booming market for nylon hosiery is ending for British mills.

The lush profits that came from consumers eager for any kind of nylon hosiery have been shrinking for the last two years. Mills are now having to—

- Look sharply at the quality of hosiery they're turning out
- Tighten up on production methods

Sales continue to creep up—14.5-million dozen pairs in 1954, 15.5-million in 1955, and 16.7-million in 1956—but prices have had to be lowered, and some qualities went begging.

Mill expansion has about stopped. Machines now being installed are replacements rather than added capacity, as was the case a few years ago. At present, there are some 170 full-fashioned mills producing nylon hosiery on 65,000 machine heads and about 22,000 seamless machines.

•

Capacity is not excessive, but mills are getting cautious.

- **Seamless hosiery,** which wreaked havoc in the American market in late years, could catch fire in Britain. Mill men think it highly unlikely; seamless flurried for a while but are now declining. Stylists say British women tried them, found them lacking, and are turning away from them.

- **Stretch stockings** are still a puzzle. Some mills have tried them and found a small but profitable market for them. Other mills have tried and failed. As matters now stand, mills don't expect stretchies to be much help to either sales or profits.

- **The coming "common market"** in Western Europe may put a still tighter squeeze on profits. Some industry leaders foresee closure of some small seamless-hosiery mills and perhaps even some full-fashioned mills. Longer range, they foresee that the common market may lead to a round of mergers among the larger knitters.

•

Hosiery imports haven't been a problem for British mills, but the growing volume of imports from Eire (Southern Ireland) is being watched.

Eire is the biggest exporter of full-fashioned hosiery to Britain. In 1954, volume was 108,707 dozen pairs; in 1955, it was 247,398 dozen pairs; in 1956, it was 202,821 dozen pairs; and it is likely to hit a new high this year.

Part of the puzzle is that Eire doesn't knit the stockings; they're only finished there. British mill men wonder where the unfinished stockings come from and strongly suspect that they're from the U. S.

Union Fails at Burlington

The Textile Workers Union (AFL-CIO) is having rough going against Burlington Industries, its prime target in this year's organizing drive.

Here's the score so far this year:

- The union called for an election in nine Burlington plants.
- One election was held, and the union lost.
- Three scheduled elections have been called off by the union.

•

The union defeat came late in June at the Galax Weaving Plant, Galax, Va. The vote was 130 against the union and 90 for the union. Three other votes were voided and 15 challenged.

The three elections canceled were scheduled at Burlington's big Peerless Woolen Mills, Rossville, Ga., and at hosiery mills in Chilhowie and Marion, Va.

Still pending are elections petitioned for Burlington plants in Dublin, Radford, Vinton, Altavista, and Hurt.

Swim-Suit Maker To Knit Its Fabrics

Plans for building a mill to knit swim-suit fabrics are being made by Rose Marie Reid, large producer of women's swim suits.

At present, the firm buys all of its knitted fabrics and will continue to buy some fabrics. The knitting subsidiary will concentrate on special swim-suit fabrics not available on the market.

Worsted Market Steady

Price increases of men's-wear fabrics for the spring and summer of 1958 have had little effect on the selling season so far.

Sales are running about level with last year, an average year.

It will be two or three more weeks before the season's sales can be firmly predicted. But mills and selling houses see nothing ahead that might cause either a sudden spurt or sudden drop in sales.

Index of manhours worked in the textile industry adjusted for changes in productivity

Textile World's Monthly Indicators

	Latest Month	Previous Month	Year Ago
Textile World's Index (1954 = 100)	**103**	**107**	**104**
Employment (thousands) B.L.S	1003.6	1004.6	1057.8
Production Workers (thousands) B.L.S	910.9	912.5	965.8
Weekly Earnings B.L.S	$58.50	$57.60	$55.87
Hourly Earnings B.L.S	$1.50	$1.50	$1.44
Weekly Hours Worked B.L.S	39.0	38.4	38.8
Production Index (1947–1949 = 100) F.R.B	97	100	100
Wholesale Price Index (1947–1949 = 100) B.L.S	95.5	95.4	94.9
Manufacturers' Sales (million $) Commerce	1,101	1,068	1,125
Manufacturers' Inventories (million $) Commerce	2,524	2,571	2,526
Inventories to Sales Ratio	2.29	2.41	2.25
Exports (Million $) Commerce	154.6	196.6	112.5
Imports (Million $) Commerce	82.8	92.7	82.5
Stock Price Index (1941–1943 = 10) Standard & Poor's	22.2	21.6	23.8
Failures (number) Dun and Bradstreet	3	6	5

National Economic Indicators

	Latest Month	Previous Month	Year Ago
Industrial Production (1947–1949 = 100) F.R.B	143	143	141
Consumer Prices (1947–1949 = 100) B.L.S	119.8	119.6	116.2
Wholesale prices (1947–1949 = 100) B.L.S	117.4	117.1	114.2
Population (millions) Census	168.2	167.9	165.1
Unemployment (thousands) Census	3.0	2.5	2.9
Employment (millions) Census	66.9	65.5	66.5
Personal Income (billion $) Commerce	343.8	342.9	326.8

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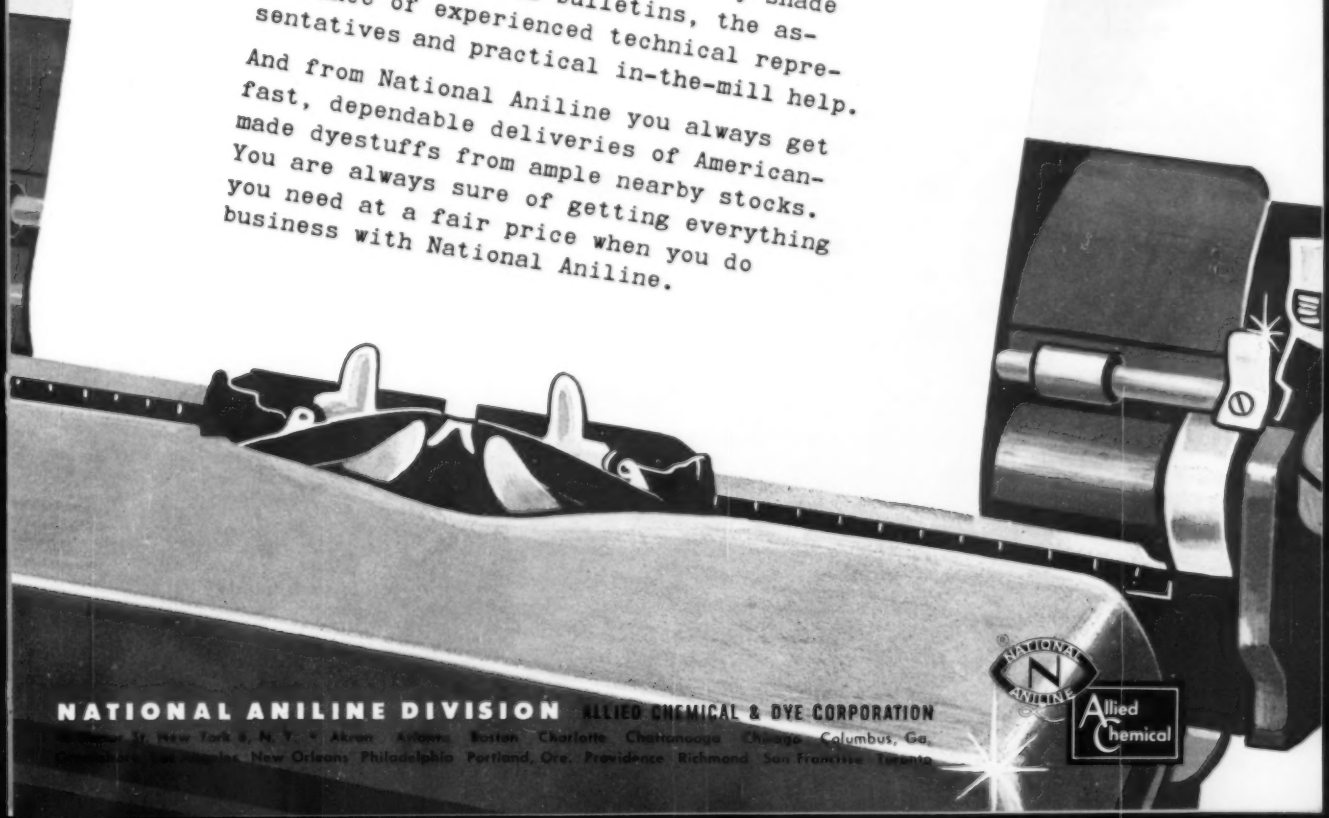
And from National Aniline you always get fast, dependable deliveries of American-made dyestuffs from ample nearby stocks. You are always sure of getting everything you need at a fair price when you do business with National Aniline.



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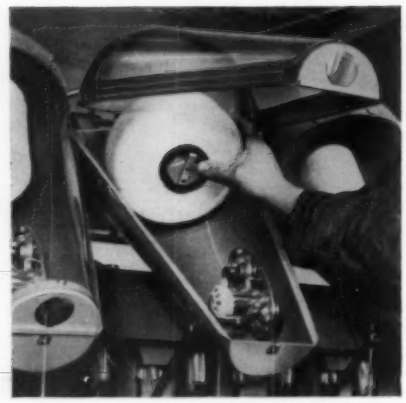

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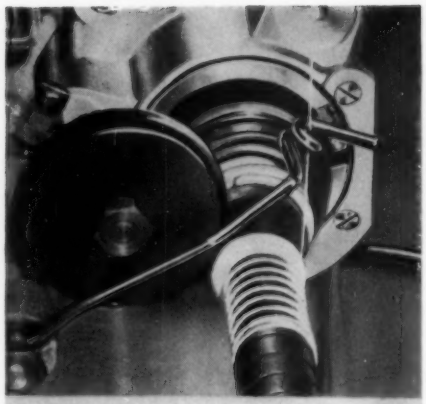

ROTOR device for tailless pirns reduces labour when filling loom batteries.

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- **Individual apparatuses**
- **Automatic suction dust remover**
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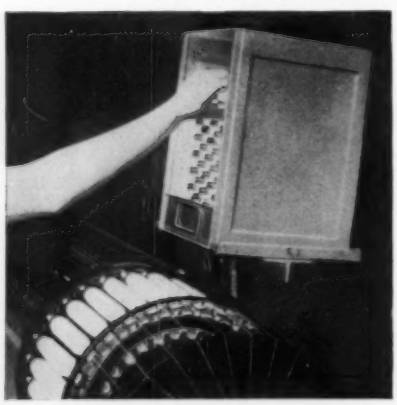
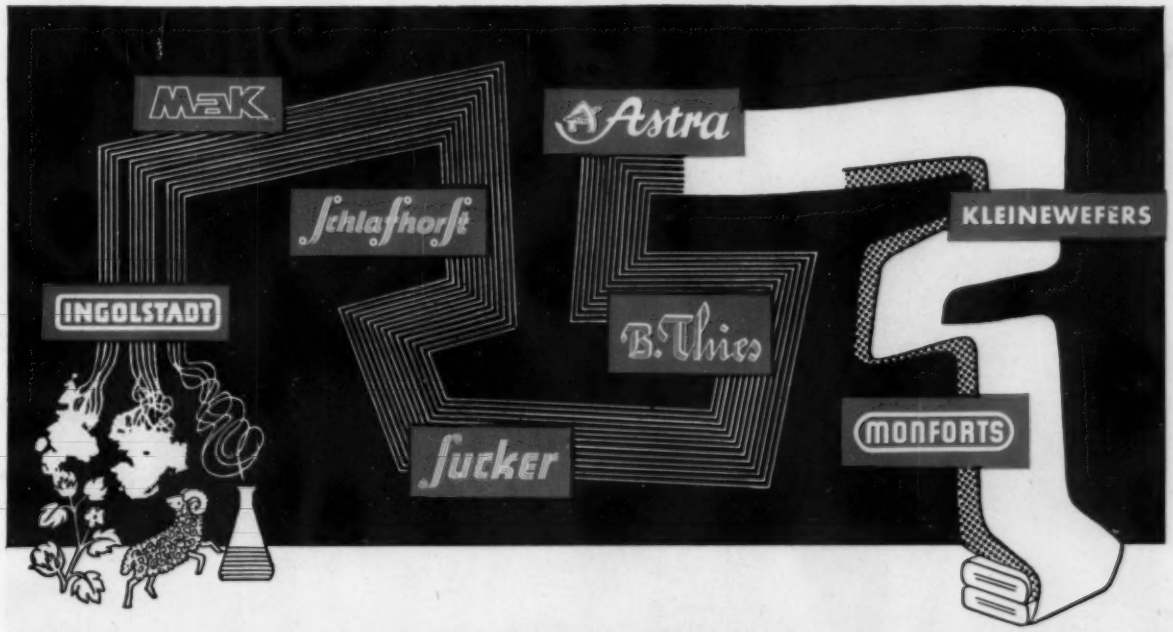


Fully wound bobbins are easy to fill in the loom battery. Exchanging of empty boxes for full ones is very simple.

Packer boxes are to be stacked very easily. 70 boxes totalling up to 7000 pirns moved at one time.



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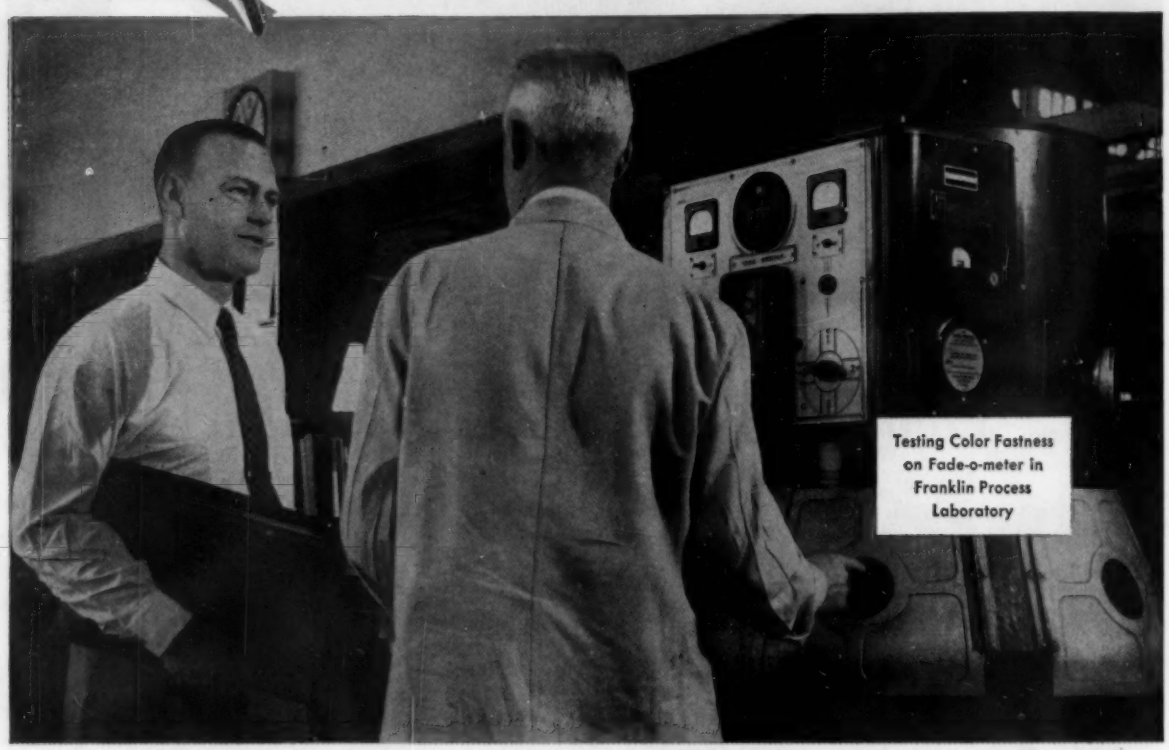

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3. **Fashion trends in colors**
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6. **The best yarn conditioning for the purpose**
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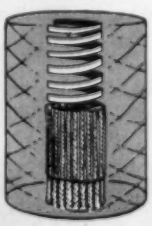

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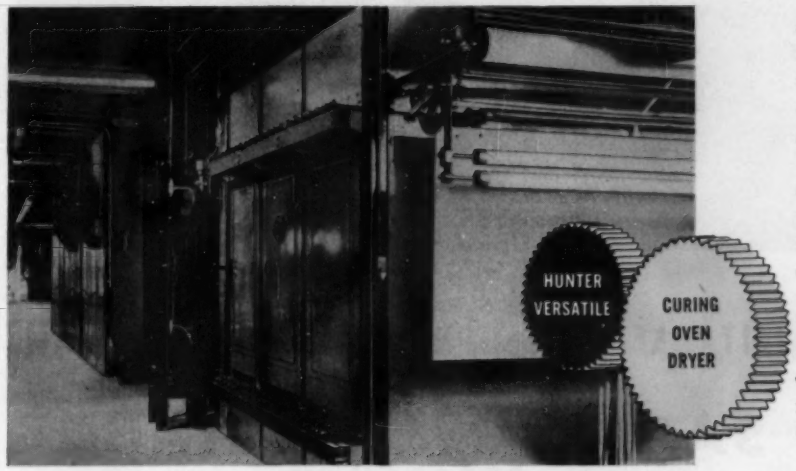

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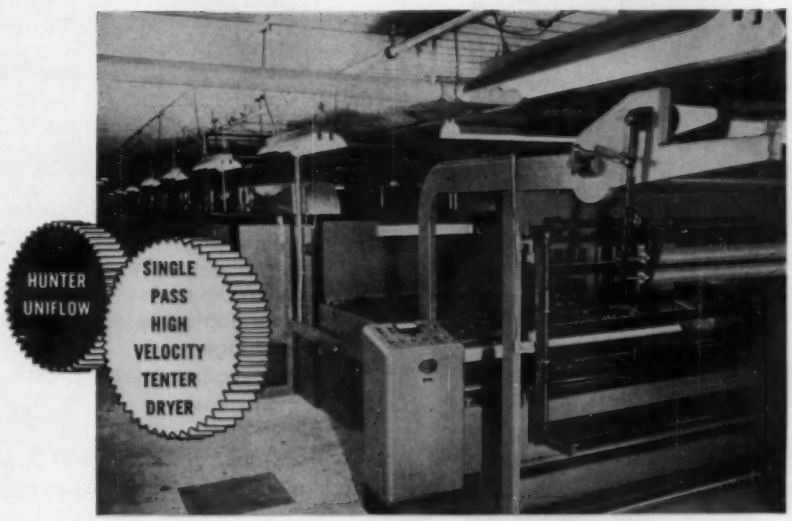

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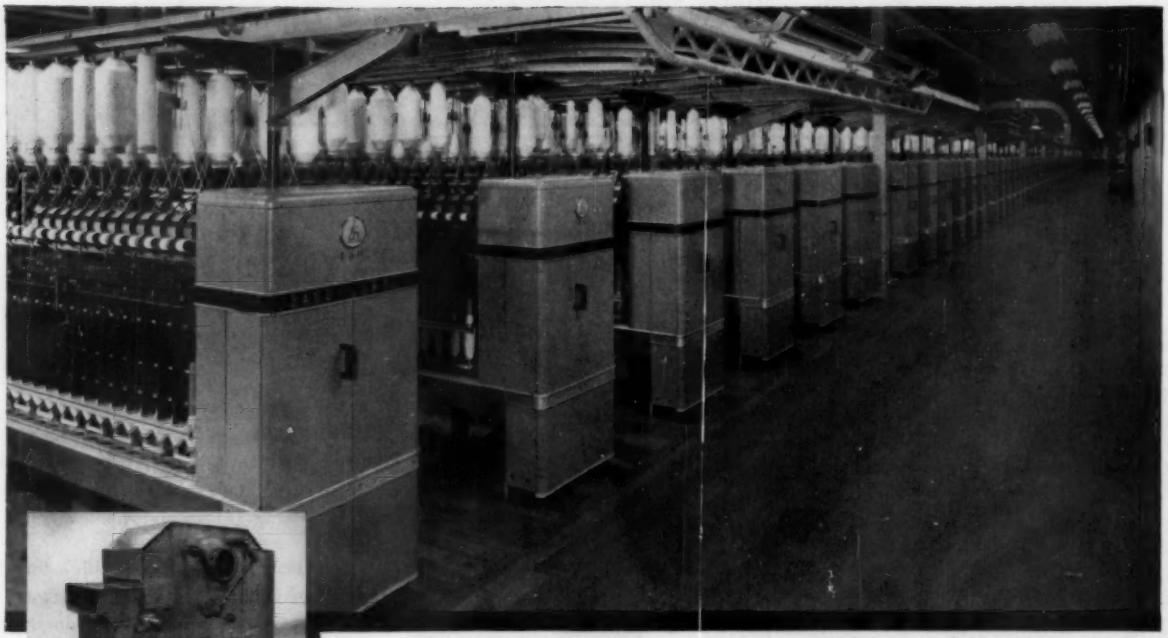
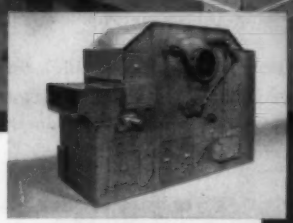
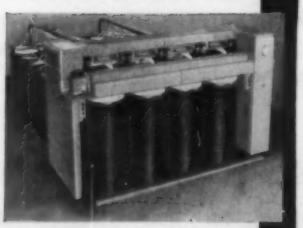
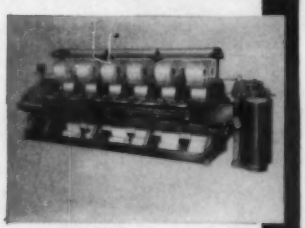








PROFITABLE MILL OPERATION STARTS WITH A SACO-LOWELLIZING PROGRAM

"Competitive position" — these are the words being uttered daily in mill management meetings. They have to do with many things — efficiency, production per man hour, quality, operating costs, waste control, and profits.

Mills throughout the country have started their move toward "Better competitive positions" with a SACO-LOWELLIZING PROGRAM. Specifically, the SACO-LOWELLIZING PROGRAM helps you make better use of floor space, thereby improving production flow; it coordinates the successive steps in processing; reduces waste, spoilage and unnecessary handling of stock; and, helps you realize the greatest economies in operating and maintenance costs.

Ask your nearest Saco-Lowell Sales Office for a "Forecast of Savings" based on a Saco-Lowellizing program.

SACO-LOWELL SHOPS

60 BATTERYMARCH STREET, BOSTON 10, MASS.

Shops at BIDDEFORD and SACO, MAINE, and SANFORD, N.C. Sales Offices: CHARLOTTE · GREENSBORO · GREENVILLE · ATLANTA

← For more data, write this page number on Reader-Service card.

BRAINARD HEAVY DUTY STRAPPING

INTEGRATED PRODUCTION . . . . Assures Constant Supply

As a division of Sharon Steel, Brainard's integrated production insures a constant supply of Heavy Duty Strapping in all heavy duty sizes and gauges:

1¼" by .035, ¾" by .035, 2" by .050, 1¼" by .050, and ¾" by .028.

and that's not all . . . BRAINARD

NEW PNC HEAVY DUTY TOOL

Pneumatic Heavy Duty Strapping Tool, first of its kind. Rugged, light weight, and portable, this power tool insures uniform tension on each band. Power does the work and eliminates operator fatigue. Specially designed for use on pallets, skids, and sheet steel.

BRAINARD STEEL STRAPPING DIVISION
WARREN OHIO

I would like more information about Brainard's Heavy Duty Strapping and the PNC.

NAME_____

COMPANY_____

ADDRESS_____

TITLE_____

Brainard Steel Strapping

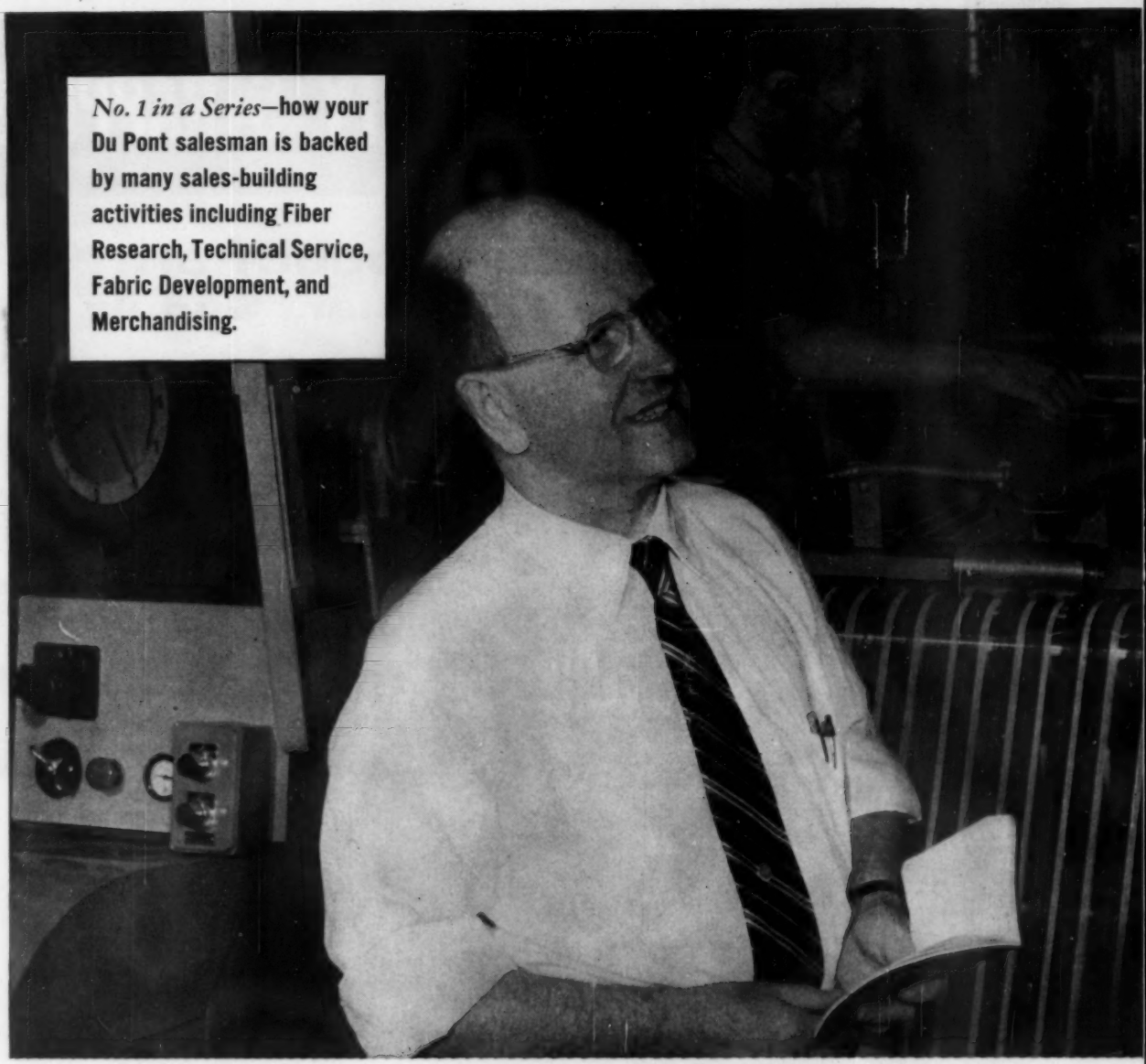
SHARONSTEEL

Brainard Steel Division, Sharon Steel Corporation
Griswold Street, Warren, Ohio

808 Tuckaseege Road
Charlotte, North Carolina

565 Western Avenue, N. W.
Atlanta, Ga.

373


No. 1 in a Series—how your Du Pont salesman is backed by many sales-building activities including Fiber Research, Technical Service, Fabric Development, and Merchandising.

This Tech Service man brings 1,500 years' experience

Another example of the many ways Du Pont and its salesmen serve the textile industry

Chemist by training (Cornell and Heidelberg), pioneer in nylon throwing, Rudy Schramm (at left, above) has years of practical experience that make him one of the key men in Du Pont's 125-man Technical Service organization. Collectively, these men have spent about 1,500 years working in and with mills. This experience is organized to assure you comprehensive up-to-date information on fibers and how to use them. First, there are separate teams of specialists which concentrate on testing, quality control, and development of each Du Pont fiber. Backing them up are the groups which spend their time on broader aspects, such as dyeing and finishing, fabric development and laboratory service.

Knowledge accumulated by all of these groups is published in the "Technical Information Bulletins." Nearly 200 up-to-date bulletins are

FROM RAW FIBERS TO RETAIL SALES . . .

← For more data, write this page number on Reader-Service card.

to Du Pont's customers

now in print. Millmen tell us they are time and money savers.

Rudy Schramm and his co-workers in Tech Service answer about 5,000 requests for assistance each year. They pass on their experience and know-how by phone, mail and, when the problem needs on-the-spot attention, by personal visits to customers' mills. They're topnotch people, efficiently organized to give you technical service that you can depend on.

* * *

Du Pont believes it can increase the market for its fibers and thus benefit its customers by providing useful assistance to all levels of the textile industry. It's through your Du Pont salesman that you as a customer have access to a range of technical and merchandising information unique in the textile industry.

PRODUCT AND PROCESS NOTES FROM DU PONT

Hi-Bulk Filament Yarn—a new hi-bulk acetate filament yarn, called Type 20, is now available in 75, 150 and heavier deniers. In addition to bulk, this yarn imparts silk-like hand and luster to lingerie and apparel fabrics, and superior pile coverage to frieze upholstery fabrics.

Greater Tear Strength—cotton-nylon blends will soon have much improved tear strength as well as the great abrasion resistance previously obtained. Type 420 nylon staple, now available in limited quantity has been engineered to match the stress-strain relationship of cotton.

"Tinselfil" Thick & Thin Rayon—this new rayon fashion yarn is now commercially available in 450 and 700 denier. Tough and lustrous, "Tinselfil" was developed to give designers another tool for creating new and interesting effects in drapery, suiting, millinery and upholstery fabrics.

New Heat and Sunlight Resistance—for outdoor and industrial uses, new Type 330 nylon has shown up to 3 times the sunlight resistance and many times the heat resistance of other nylon in laboratory tests. Available in 210 denier, it has promise in many applications, particularly for coated fabrics which can be translucent or pastel for new sales appeal.

Technical Information Bulletins contain detailed, practical information on Du Pont product and process developments. They cover fiber properties, mill processing, dyeing and finishing. Refer to your copies frequently; they can save you time and money. To be sure you have all the bulletins you need, check your Du Pont salesman or Tech Service representative.

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

DU PONT BUILDS PROFITS FOR YOU

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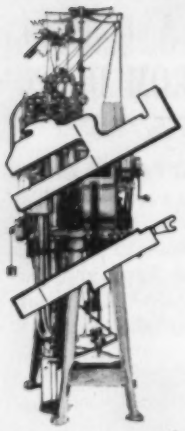
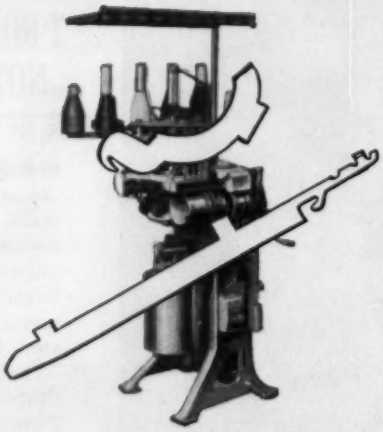
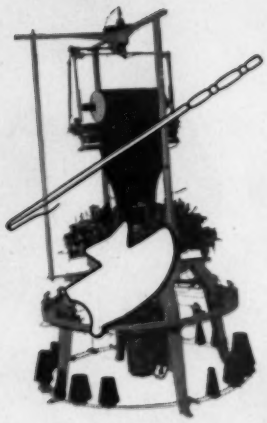


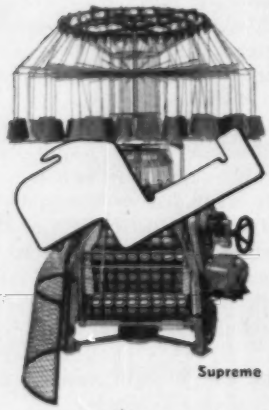
Scott & Williams



Bentley



Tompkins



Supreme

IVES Replacement Parts

are "tailored" to fit *exactly* the machines for which they are intended. That's why they are used for knitting the world's finest fabrics. All of IVES' needles and parts are specially hardened and tempered, insuring smoother and longer wearing parts that reduce your costs and increase your profits.

Contact IVES if you operate these machines:

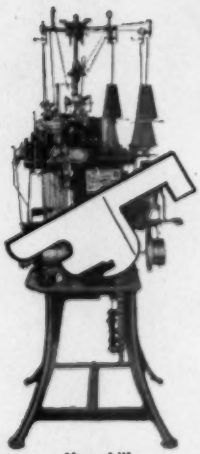
Supreme ● Fidelity ● Tompkins

Kidde ● Precision ● Brinton

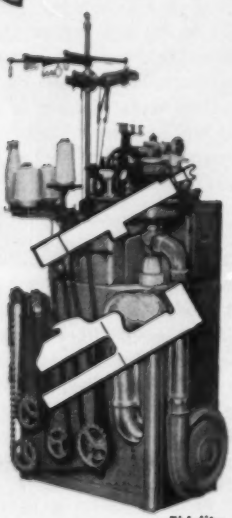
Wildman ● Crane

Banner ● Reiner

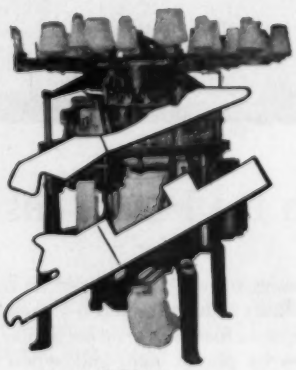
Scott & Williams ● Bentley



Hemphill



Fidelity



Wildman

THE LOYAL T. IVES COMPANY, INC.
NEW BRUNSWICK, N. J.

Prompt deliveries assured. Write, Wire or Phone CHarter 9-0396-7

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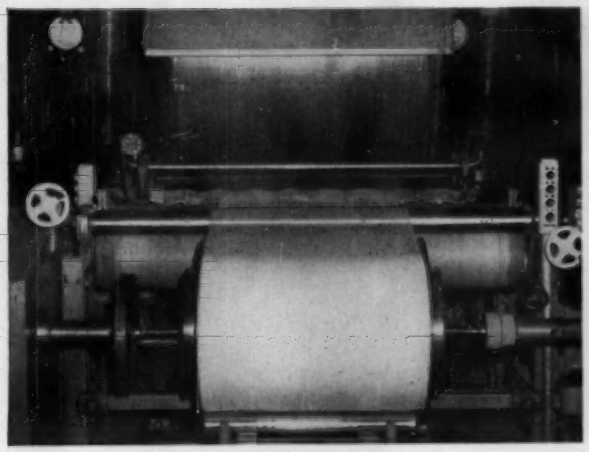
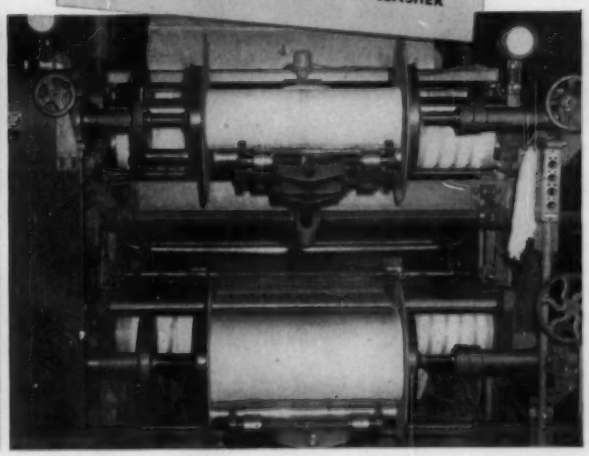
VICKERS® HYDRAULIC SLASHER DRIVES

WIND BETTER LOOM BEAMS FASTER

For

ANY TENSION • ANY SPEED • ANY SET
ANY YARN • ANY DIAMETER • ANY WIDTH
ANY HORSEPOWER • ANY DOUBLE HEAD
ANY SINGLE HEAD • ANY SLASHER





West Point Foundry & Machine Company single and double head slashers with Vickers Hydraulic Drives.

This is the slasher drive that can really meet *all* your needs . . . flexibility is sufficient to cover all known conditions of slashing. Now your yarn and your beams can be wound exactly the way you want them . . . and quality is always the same.

Design is unusually compact . . . the drive requires no floor space outside of the slasher head end frame dimensions. Automatic overload protection and dependability are important features. Completely sealed and inherently self-lubricated, there is no need for oiling and greasing.

ONLY VICKERS HYDRAULIC SLASHER DRIVES HAVE ALL THESE ADVANTAGES:

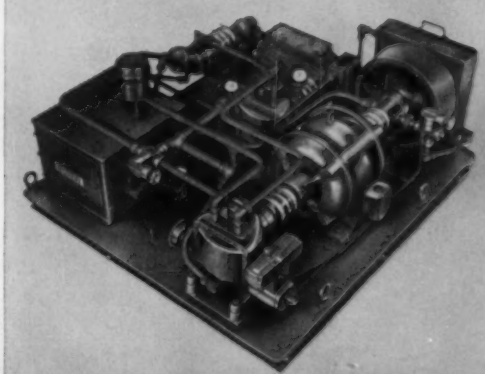
1. Better Tension Control
2. Complete Speed Range
3. Smoother Acceleration and Deceleration
4. Selective Creep Speeds
5. Better Response
6. Reduced Operating Costs

For further information about Vickers Hydraulics on slasher drives, write for Bulletin 55-71. For information regarding application of Vickers Hydraulics to general textile machinery, write for Bulletin 54-66.

VICKERS INCORPORATED
DIVISION OF SPERRY RAND CORPORATION
Machinery Hydraulics Division
ADMINISTRATIVE and ENGINEERING CENTER
Department 1588 • Detroit 32, Michigan

Application Engineering Offices: • ATLANTA • CHICAGO • CINCINNATI CLEVELAND • DETROIT • GRAND RAPIDS • HOUSTON • LOS ANGELES AREA (El Segundo) • MINNEAPOLIS • NEW YORK AREA (Summit, N.J.) PHILADELPHIA AREA (Media) • PITTSBURGH AREA (Mt. Lebanon) PORTLAND, ORE. • ROCHESTER • ROCKFORD • SAN FRANCISCO AREA (Berkeley) • SEATTLE • ST. LOUIS • TULSA • WASHINGTON • WORCESTER
IN CANADA: Vickers-Sperry of Canada, Ltd., Toronto

STANDARD VICKERS® HYDRAULIC SLASHER DRIVE PACKAGE



ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

For more data, write this page number on Reader-Service card. →

Precision-made Accotex Aprons keep yarn quality high

The higher drafts and faster speeds of modern spinning frames make it more important than ever to use an apron that's engineered for the job. That's why hundreds of mills have specified Armstrong Accotex® Aprons.

These aprons . . . like the equipment they run on . . . are precision made to give you the smooth drafting action and superior yarn control so necessary to high-speed production.

A major reason for this performance is that each Accotex Apron is identical in every respect . . . in size, in frictional qualities, flexibility, and abrasion resistance. As a result, these aprons fit snugly and run smoothly on high-draft frames.

The special synthetic rubbers used in Accotex Aprons are precision made, also. The compounds used for the inner and outer surfaces are specially tailored for the different jobs each must do.

For example, the inner—or white—layer must be smooth enough to slip over the pins freely, yet it must have the right friction to grip the drive roll firmly. Special electrolytes added to this compound help to prevent the accumulation of loose fibers on this inner surface.

The black outer surface is designed to resist abrasion and tearing and has enough friction to keep the top apron spinning smoothly without slipping.

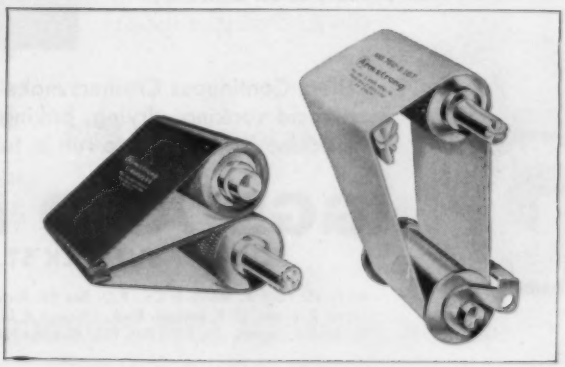
These careful manufacturing methods, backed by rigid quality control and inspection standards, are your assurance that the Accotex Aprons you buy will help you get the best spinning performance . . . shift after shift . . . from your high-draft frames.

If you're not already using Accotex Aprons, ask your Armstrong man to arrange a test next time he calls. Or write for more information to Armstrong Cork Company, Industrial Division, 6408 Dauphin Street, Lancaster, Pennsylvania.

Armstrong ACCOTEX APRONS

. . . used wherever performance counts

FOR DOUBLE-APRON SPINNING, use Accotex NO-7075 Aprons. Inner surface grips drive roll firmly, yet slips over pins without jamming. For single-apron spinning, the NO-750 Apron gives the smooth drafting action needed for strong, uniform yarn.



TESTED and PROVED

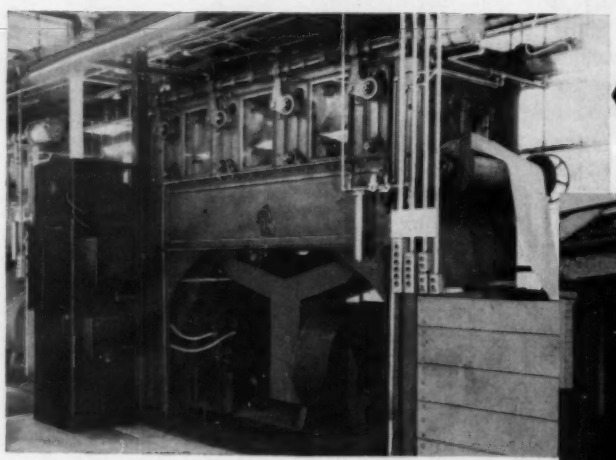
The Fleet Line.

CONTINUOUS CRUSHERS

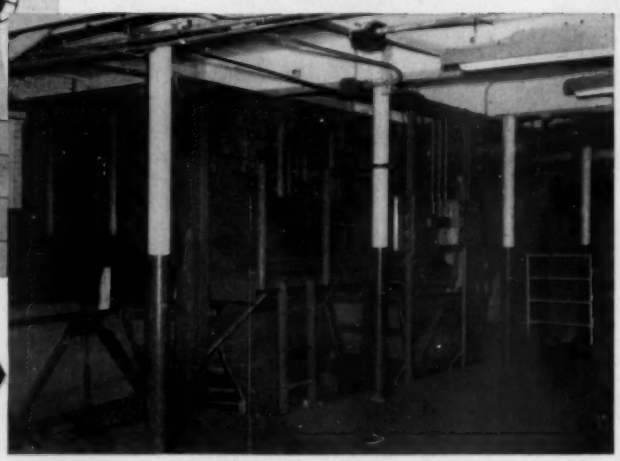
Protect Your Profit Figures

In many plants for many years, R & L Continuous Crushers have set the standard for reliable operation—and *only* R & L engineering has developed the know-how to offer improvements on their superb performance.

While these machines deliver cloth at the production rate of the carbonizing range, the actual crushing speed in the machine is better than 200 yards per minute. A high efficiency is created through this increased speed and the reversing action which alternately crushes with manifold pressure nips, then whips vigorously to get rid of dust. Performance is automatic — needs practically no attention because balanced scrays stop the machine if cloth supply gets out of balance with capacity, thus safe-guarding your material.



MODEL CCT4 is a dual unit automatic continuous crusher of 2 units in tandem.



MODEL CCNB4 is a single unit automatic continuous crusher of same capacity as our dual unit.

These Continuous Crushers make possible one single continuous operation of acid soaking, drying, baking, and crushing. Continuous neutralizing machine is available to run in tandem with them if desired.

RIGGS AND LOMBARD INC.

FOOT OF SUFFOLK ST., LOWELL, MASSACHUSETTS

AGENTS: Paul A. Merriam Co., P.O. Box 86, Prov., R. I. • Larry T. Nelson, 860 3rd St., Santa Monica, Calif. Albert R. Breen, 80 E. Jackson Blvd., Chicago 4, Ill. • F. W. Warrington Co., 611 Johnston Bldg., Charlotte, N. C. A. Harold Zayotti, Jr., P.O. Box 125, Riverton, N. J. • H. E. Mott Co., Limited, Brantford, Ontario, Canada

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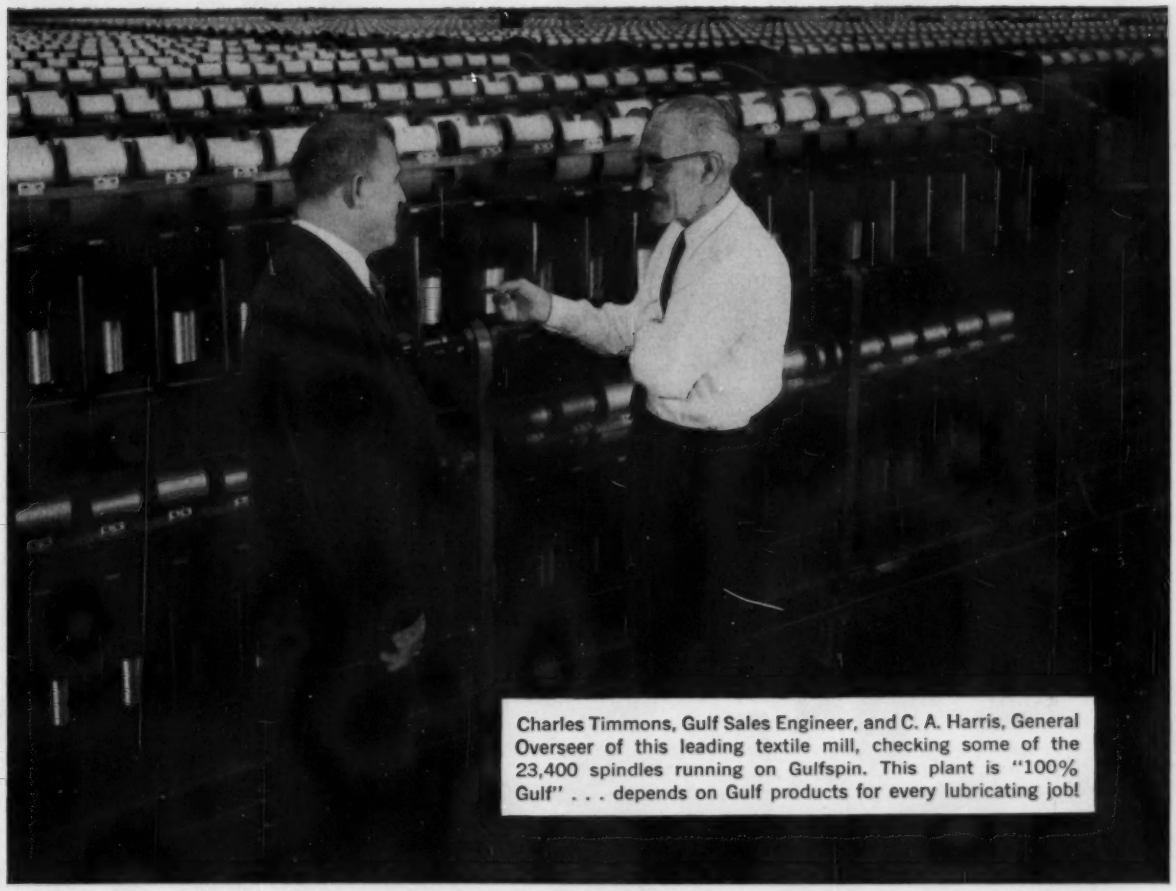

Charles Timmons, Gulf Sales Engineer, and C. A. Harris, General Overseer of this leading textile mill, checking some of the 23,400 spindles running on Gulfspin. This plant is "100% Gulf" . . . depends on Gulf products for every lubricating job!

At a prominent South Carolina Mill—

23,400 twister spindles . . . no lubrication trouble in 5 years . . . with GULFSPIN!

That's quite a performance . . . twisters with a total of 23,400 spindles functioning perfectly for 5 years with no lubrication trouble at all! The oil: Gulfspin.

As Mr. C. A. Harris, General Overseer, says: "Gulfspin does a fine job . . . we've used it for 5 years, and like it!" Gulfspin contributes to smooth operation and reduced maintenance costs. It's an outstanding spindle oil, specially designed to keep contaminants from building up in the spindle bases. Gulfspin also protects against rust and excessive wear —and helps cut down on starting torque.

Mr. Harris sees that oil is changed every 6 months, but he tells us that Gulfspin is still clear, even after that length of service! If *you'd* like to do away with sludge, rust, sticking spindles, call your Gulf Sales Engineer . . . at your nearest Gulf office.

Gulf Oil Corporation
1822 Gulf Building
Pittsburgh 30, Pa.

GULF

THE FINEST PETROLEUM PRODUCTS FOR ALL YOUR NEEDS

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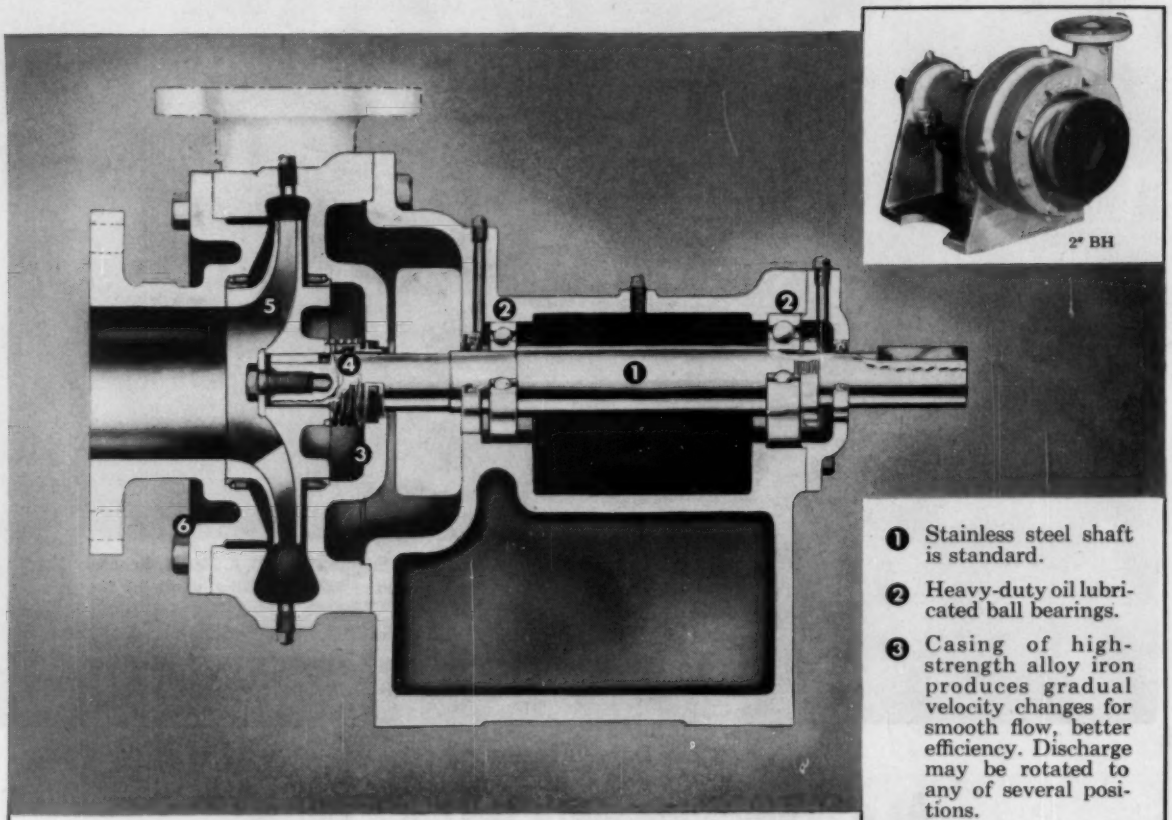
New high speed, high head centrifugal pumps ... the Gardner-Denver BH line



1. Stainless steel shaft is standard.
2. Heavy-duty oil lubricated ball bearings.
3. Casing of high-strength alloy iron produces gradual velocity changes for smooth flow, better efficiency. Discharge may be rotated to any of several positions.
4. Mechanical seal for long life without attention.
5. Hydraulically balanced bronze impeller.
6. Casing cover readily removed for impeller inspection.

Quality inside improves useful output

BH PUMP RATINGS

SIZE	HORSEPOWER	SPEED RANGE IN RPM	CAPACITY RANGE IN GPM
1"	1 to 10	1450 to 3460	55 to 150
1½"	1½ to 20	1450 to 3460	110 to 220
2"	2 to 25	1450 to 3460	170 to 440
3"	3 to 40	1450 to 3460	340 to 520

For complete information on these new, Gardner-Denver BH centrifugal pumps, write for Bulletin 2-2e.

ENGINEERING FORESIGHT—PROVED ON THE JOB
IN GENERAL INDUSTRY, CONSTRUCTION, PETROLEUM AND MINING

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario
Branch Offices: Atlanta, Ga.; Birmingham, Ala.; Knoxville, Tenn.; Washington, D. C.; New York, N. Y.; Philadelphia, Pa.; Pittsburgh, Pa.; New Orleans, La.; Louisville, Ky.

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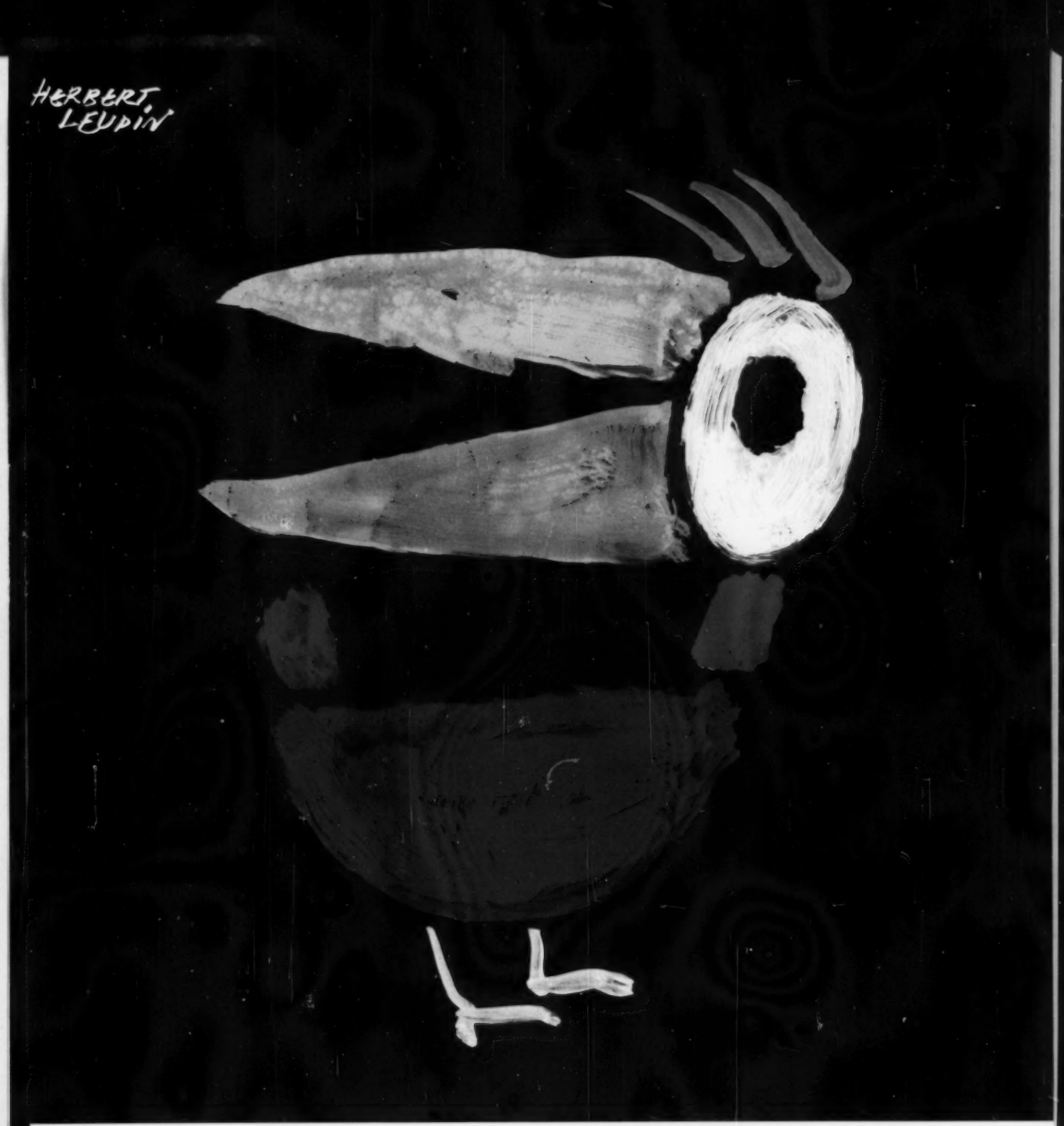


Heard from Sandoz on dyeing Polyester fibers?

For polyester fibers alone, or for blends with viscose or cotton, Sandoz Artisil Ultradispersed® dyes are an effective answer. Particles are so fine and so well dispersed that good leveling and penetration are assured. Artisil Ultradispersed dyes are strongly recommended for fabrics which will be heat treated. Where blends with cotton/viscose are to be over-dyed with vats, they are perfectly resistant to the reagents in the vat dye bath.

In the use of these exceptional Sandoz dyes, the active cooperation of Sandoz technicians is at your service. Bring your next dyestuff question to SANDOZ, INC., 61-63 Van Dam Street, New York 13, N. Y. ALgonquin 5-1700.

SANDOZ

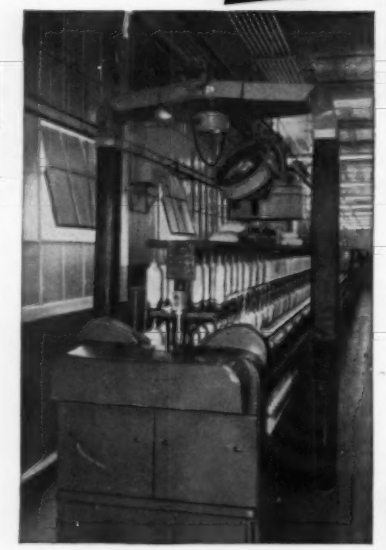
THINKS AHEAD WITH TEXTILES

SANDOZ

Now! MONORAIL Cleans--

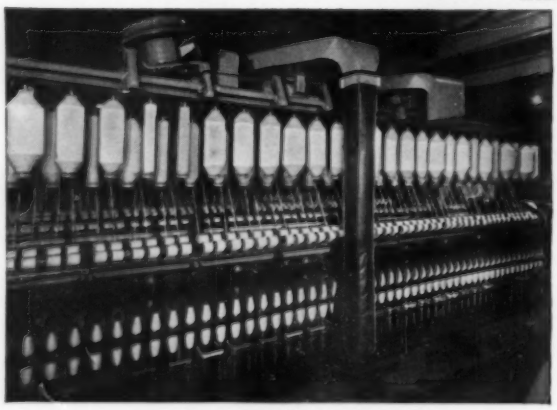
Frames, Underframes, Ceilings From Track or Creels

1



New type underframe cleaner applied to standard cleaner units traveling on Monorail track.

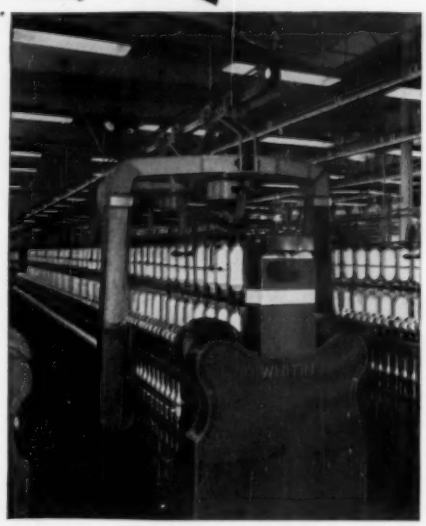
2



Creel mounted units clean ceiling, frame, and underframe.

3

Underframe unit mounted on old cleaning system to complete cleaning operation.



Standard units for cleaning the upper part of frames — underneath the frames, and the ceilings — each individually designed to perform their particular operation.

These units can be designed for travel on either Monorail overhead track or on creel mounted Tri-rail track.

Similar automatic units are also available for cleaning weave rooms by means of single Monorail tracks over rows of looms or on crane-type units for multiple row loom cleaning.

Let an experienced textile engineer recommend the particular cleaning units to solve your cleaning problems.

Member of American Textile Machinery Assn.

AMERICAN MONORAIL COMPANY

OVERHEAD HANDLING EQUIPMENT

13108 ATHENS AVENUE, CLEVELAND 7, OHIO (IN CANADA—CANADIAN MONORAIL CO., LTD., GALT, ONT.)

for

Softness and Lubricity

SOROMINE® AL

a white amphoteric softener-lubricant

Improves the Softness, Sewability, and Napping Qualities of Fabrics

SOROMINE AL softens and lubricates cellulosic, synthetic, and animal-fiber yarns and fabrics. It not only imparts a soft, smooth hand, but also reduces fiber-to-metal friction; this serves to prevent "fiber fractures" during high-speed machine sewing and to minimize fabric damage during napping operations. The lubricating action of this compound also facilitates the winding and knitting of yarns. SOROMINE AL can be applied in almost any type of textile-processing equipment, e.g., mangles, padders, jigs, and package machines. Moreover, since it is white and has good resistance to yellowing, SOROMINE AL minimizes fiber discoloration.

Write today for further information about SOROMINE AL, the new softener-lubricant.

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ANTARA® CHEMICALS

A SALES DIVISION OF

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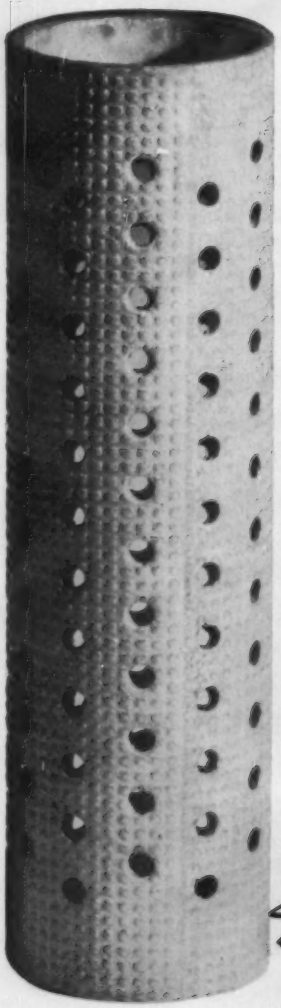

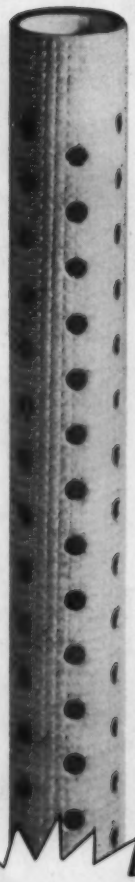

NOW . . . SONOCO OFFERS **11** ECONOMICAL METHODS FOR YARN IDENTIFICATION

now...

the SONOCO DYTEX® "L" TUBE for package dyeing!

SONOCO expands its line of quality DYTEX tubes with the addition of the DYTEX "L" Tube. This new tube, a product of SONOCO research, has passed critical evaluation by leading mills.

The DYTEX "L" Tube was designed specifically for those who prefer a light colored tube for bleaching and dyeing. It is a sturdy, dependable carrier having all the fine characteristics of the other tubes in SONOCO'S DYTEX line.

SONOCO DYTEX Tubes are now available in base colors of brown, blue, green and tan. For yarn identification, the colored tubes may be used and tubes can be supplied with different color rings on the ends.

For the ideal combination, use SONOCO DYTEX Tubes with Plastavon Sleeves for all your bleaching and dyeing operations. You profit by using SONOCO yarn carriers designed for the job. Order a supply now.

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Warner & Swasey Pin Drafters® boost production 30%–in same floor space

at DELAWARE MILLS, INC.

"ARE we getting maximum floor space utilization from our present drawing equipment?", asked W. H. Michael, Manager of Delaware Mills, Inc., New Castle, Delaware. As the result of a detailed subsequent cost analysis, two sets of pin-controlled drawing were replaced with new high-speed Warner & Swasey Pin Drafter Intersecting Draw Frames.

Delaware Mills found that pound-for-pound they now get 30% more from the Warner & Swaseys in the same amount of floor space. Quality of their hi-bulk yarns are maintained at Delaware's same high level—and machine maintenance has been drastically reduced!

® Reg. U. S. Pat. Off.

Faller bar repinning previously cut deep into profits. Delaware now estimates that during the past year less than 50 Warner & Swasey Plastic-Bonded Faller Bars have been repinned on their six new high-speed Pin Drafters—at a cost of approximately 6 cents a day per machine! Because it's now so negligible, faller bar cost records have been discontinued.

If your plant expansion program is hampered by limited floor space, or if costly maintenance is cutting into profits, it will definitely pay you to call in the nearest Warner & Swasey Field Engineer.

SALES OFFICES

Main Office and Factory, 5701 Carnegie Avenue, Cleveland 3, Ohio
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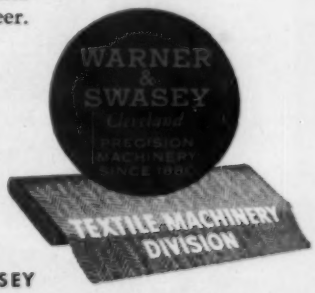

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS . . . WITH A WARNER & SWASEY

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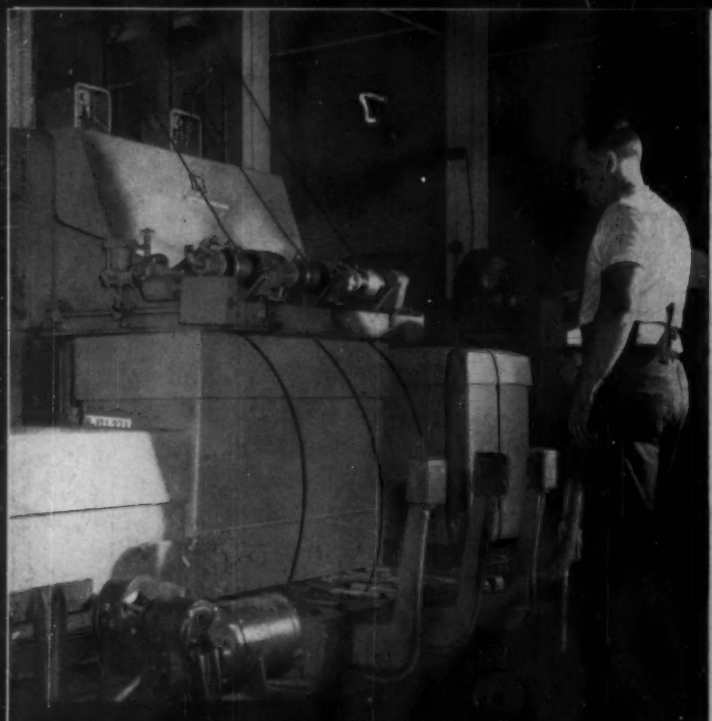
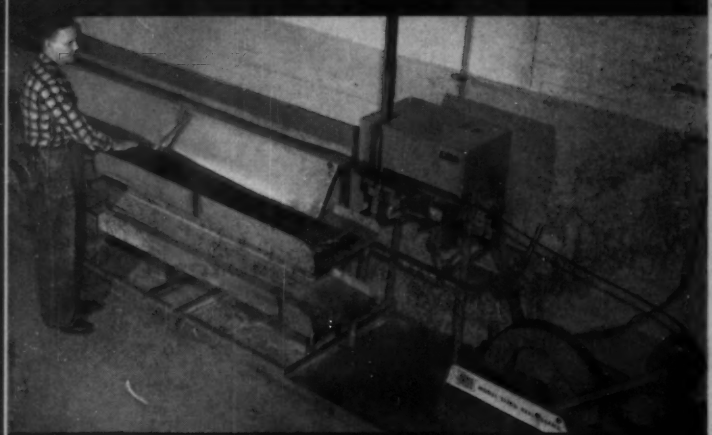


ACME STEEL **STEEL STRAPPING** machine compresses and straps telescope boxes of finished goods. *(Idea No. S6-6)*



ACME STEEL **STEEL STRAPPING** is threaded through seal and cut to length by automatic radial band cutter. *(Idea No. S6-4)*

ACME STEEL **STEEL STRAPPING** prepared by radial band cutter speeds baling of finished goods. *(Idea No. S6-5)*

AIM* for product protection

Product protection through Acme Idea packaging can bring you the important benefits of safe, secure packs with increased speed and labor—material economies. Throughout the entire scope of industry Acme Steel Ideas, equipment and materials are protecting and speeding products from production line to final user. You owe it to yourself to learn how.

A product protection wise Acme Idea Man is located near your plant. He is immediately available to discuss your packaging problems and provide you with hundreds of in-use Acme Steel Strapping Ideas for better packaging and shipping. The seven Ideas shown on these pages are included in the Ideas-In-Action Report files your Acme Idea Man will be pleased to show you. Acme Steel has developed many Ideas from experience in all types of industry. Among them are sure to be applications that can be applied to your particular operations with important time and dollar benefits to you.

An Acme Idea Man is ready to offer you Ideas-In-Action, plus his training, experience and steel strapping know-how without cost or obligation in any form.

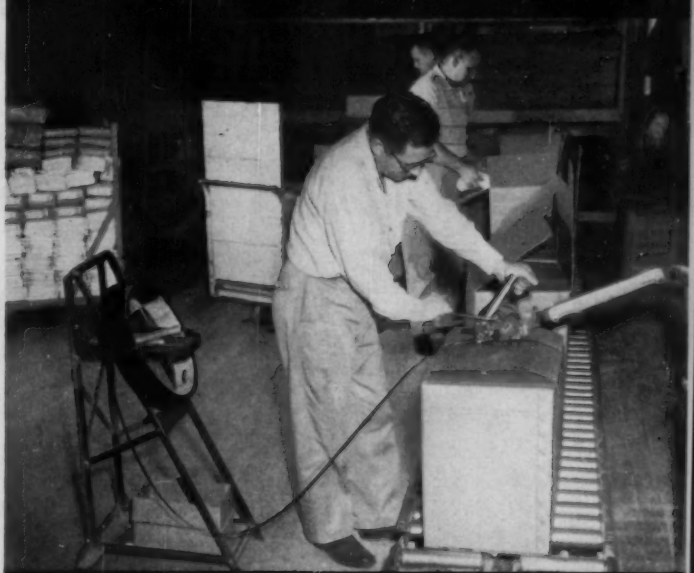
Your *Acme Idea Man can be contacted at the nearest Acme Steel office. Look under "Steel Strapping" in your classified directory, or send the coupon for full information.

ACME STEEL **STEEL STRAPPING**

STEEL STRAPPING machine closes and reinforces boxes of finished cloth faster, more securely. *(Idea No. S5-5)*

STEEL STRAPPING serves both as closure and reinforcement for boxes of synthetic fabrics. *(Idea No. S5-6)*

STEEL STRAPPING closes boxes of unfinished cottons and synthetics for safe shipment. *(Idea No. S5-8)*



STEEL STRAPPING is applied to packaged toweling by Steelstrapper mounted over conveyor. *(Idea No. S5-7)*

IDEA BOOKS

These two information packed Acme Steel Idea Books are available to you on request. They will provide dozens of clues to better ways to package and protect your products and plant output.

Write today for your choice of the above two Acme Steel Idea Books. Merely indicate the books you want on the coupon at the right and mail. Your request will be filled promptly, with no obligation.

Acme Steel Products Division
ACME STEEL COMPANY, Dept. TAS-87
Chicago 27, Illinois

Please send me the new Acme Steel Idea Books I have checked below:

- ☐ Steel Strapping Catalog
- ☐ Unitizing Catalog
- ☐ Have an Acme Idea Man call.

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Title_____

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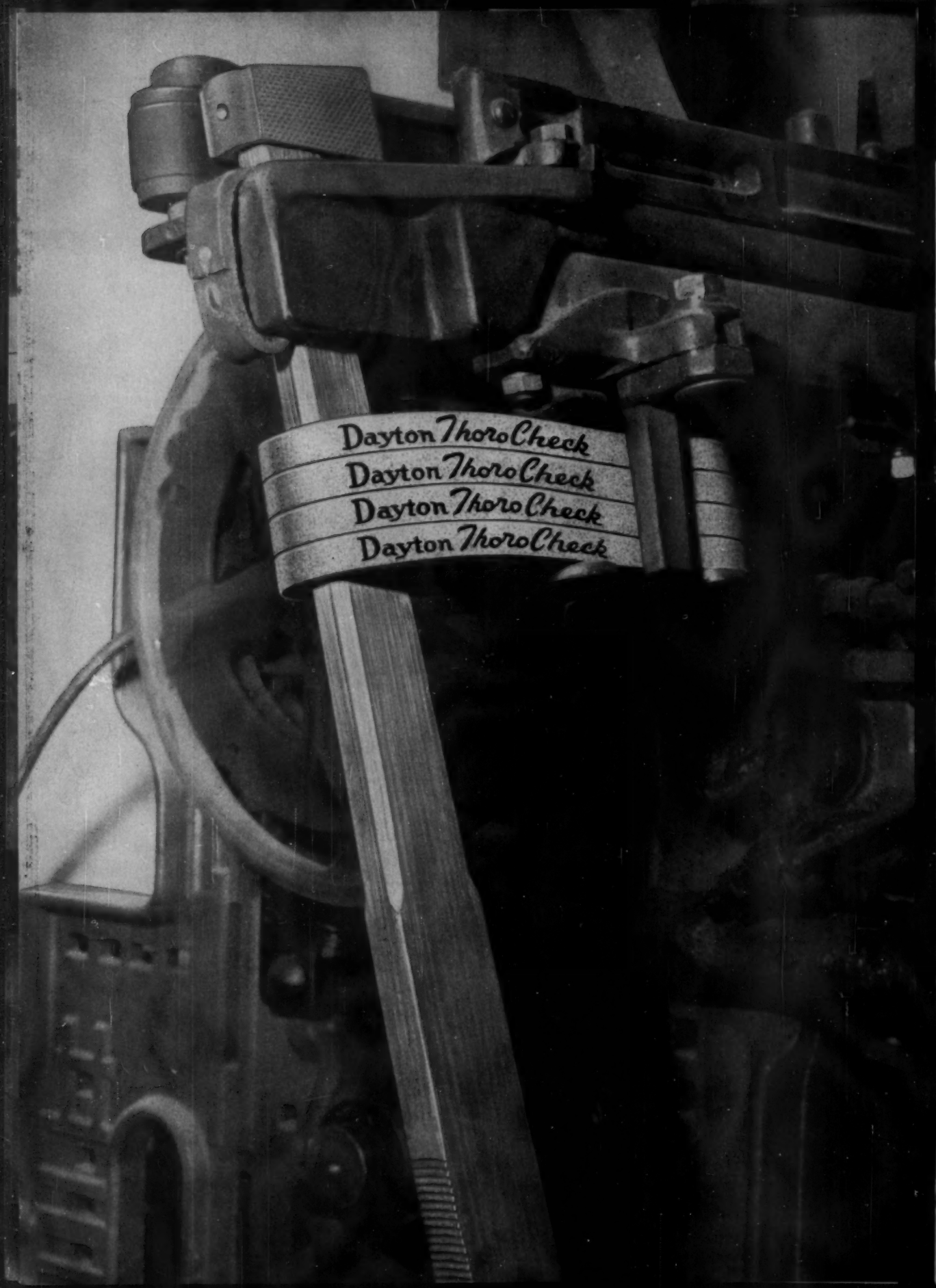

Dayton ThoroCheck
Dayton ThoroCheck
Dayton ThoroCheck
Dayton ThoroCheck

How to improve picker action and reduce costs in the 3 vital areas of shock and wear

Better shuttle control, improved picker-stick checking and lower maintenance costs result when Dayton Loop Pickers, Check Straps and Lug Straps are installed in combination.

Mill supervisors have learned the important savings to be had from Dayton Thorobred Loop Pickers, Endless ThoroCheck Straps or Thorobred Lug Straps, alone. Now, they are reasoning, the way to get even greater advantages is to install the *entire* combination. Scientifically engineered and designed to work *together*, Dayton picking products are built to take the tremendous shock of high speed shuttles, smoothly check picker sticks and accurately deliver the shuttle return. Service life runs 2 to 3 times longer than other similar products. They offer valuable protection to costly loom parts while reducing down-time and replacement costs.

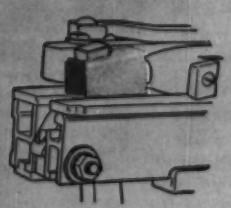
Dayton Thorobred Loop Picker's long service, resistance to wear and accurate shuttle catch are directly traceable to their scientific construction. Their tilted shape assures perfect contact, without strain. Accurate seating to guard against tearing the loop ply is assured by a flared bottom and tapered picker hole design. As a result, they seat snugly into position and cushion millions of contacts without visible wear. Smooth, rounded corners prevent jerked-in fillings.

Dayton Endless ThoroCheck Straps are built to provide strain-free, graduated checking action that eliminates drag over stick. They give fast, Monday morning starts because they're unaffected by temperature or humidity—are not subject to permanent elongation. They outlast other straps repeatedly, in mill tests, by 6 to 8 months. The longitudinal cord adds strength for long, economical service.

Dayton Thorobred Deluxe Lug Straps give longer service because of their one-piece, link-free construction. A molded-in plug absorbs the terrific shock of picker-stick thrusts to add even greater protection for costly loom parts.

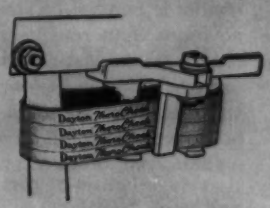
Try any of these amazing Dayton products for immediate improvement in your picking operation. For maximum results and really substantial savings—install the entire Dayton Picking Combination. Your Dayton representative will be calling on you soon to help you get started. Dayton Rubber Co., Textile Division, 401 S. Carolina National Bank Bldg., Greenville, S. C.

Dayton Thorobred Loop Picker



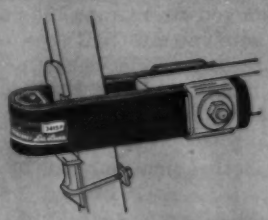
New Design! Narrow back eliminates wear on lay end strap.

Dayton ThoroCheck Straps



Extra economy! Can be replaced singly or in sets.

Dayton Thorobred Deluxe Lug Straps



One-piece construction! No rivets or other parts to work loose.

Dayton Rubber

Dayco and Thorobred Products for Better Spinning and Weaving

(C) D.R. 1957

Crane Valves Prove Their Value on Steam Service

Out-slugs steam for 34 years!

Valve records like this can point the way to lower piping maintenance costs in your own plant!

Here you see a Crane 175-pound Ferrosteel gate valve with 34 cost-free years on 80 psi. steam service—one of a 40-valve installation made in 1923 at Long-Bell Division of International Paper Company, at Longview, Wash.

In all that time, only one of the original 40 valves has been replaced. More important, 39 of the original valves . . . and the replacement . . . are still giving dependable control of steam to kilns—with no more than routine stuffing box maintenance since installation in 1923.

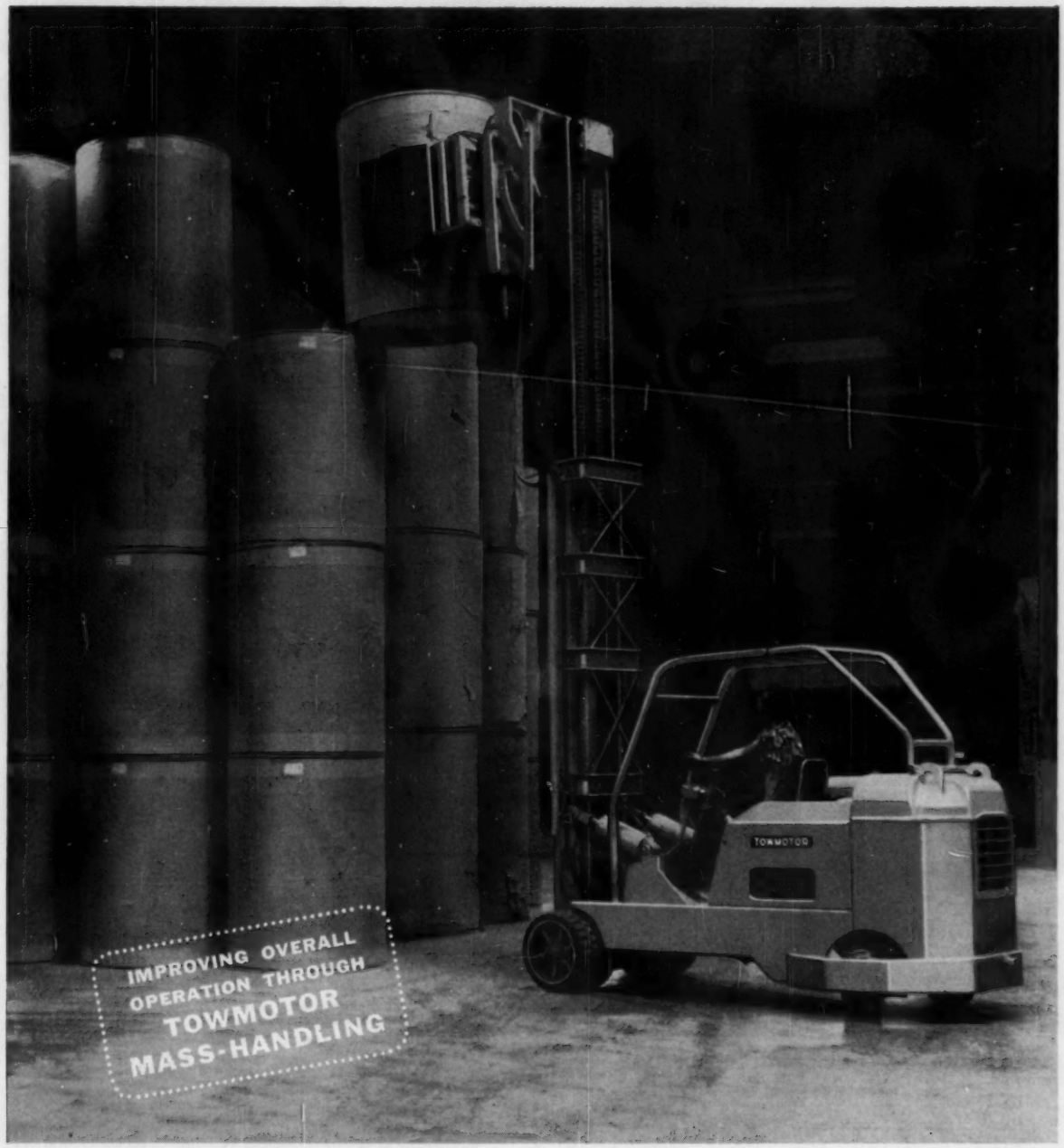
Be sure *your* operation gets low-cost valve service: insist on Crane valves and fittings, from the big, complete Crane line—first choice of industry for over a century.

ASK FOR your copy of "Valve Performance Facts"—32 case histories on valve installations throughout industry. See your Crane Representative or write Crane Co. today.

CRANE VALVES & FITTINGS

PIPE • PLUMBING • KITCHENS • HEATING • AIR CONDITIONING

Since 1855—Crane Co., General Offices: Chicago 5, Ill. Branches and Wholesalers Serving All Areas



...lets one man handle work you'd pay a crew to do!

By putting new efficiency, safety and positive control into the hands of Towmotor lift truck operators you enable them to do a *bigger day's work, easier.* You let each one handle jobs you'd normally hire a *gang* to do.

Through modern Towmotor mass-handling each operator has the power to improve your profit picture, because the new Towmotor fork lift trucks multiply their productivity. Look over the new features that operators like best about our latest models—such as:

- New planned-comfort design
- Off-center adjustable seating
- Double action hydraulic tilt
- Newly-improved power steering
- "3-second access" to engine
- Famed 12" reach for all controls

Before you decide on your next fork lift truck, we urge you to get all the facts on the newly-designed Towmotor units. Write to Towmotor Corporation, Cleveland 10, Ohio today and ask for our new illustrated lift truck booklet—No. SP-23.

Leaders for 38 years in building Fork Lift Trucks, Tractors and Carriers

TOWMOTOR THE ONE-MAN-GANG® **-GERLINGER**

Gerlinger Carrier Company, Dallas, Oregon, is a subsidiary of Towmotor Corporation

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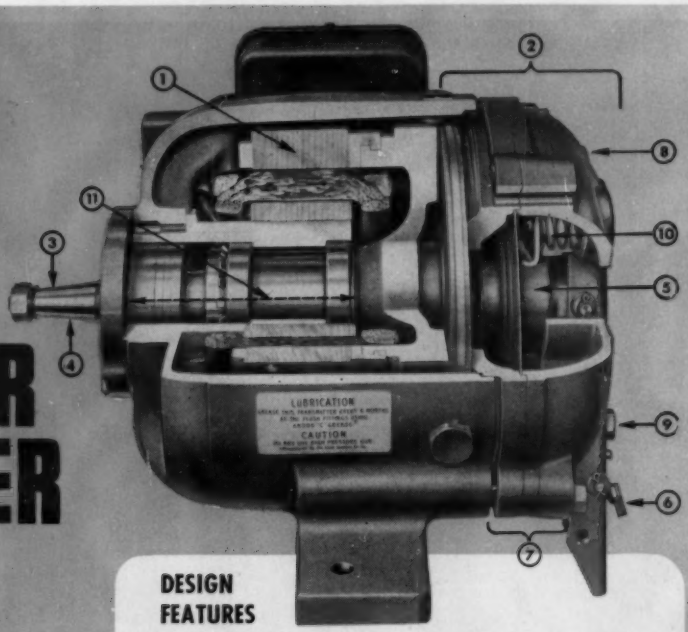
THE DEPENDABLE DIEHL

"BA" POWER TRANSMITTER

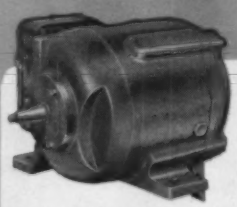
For Draper Looms

Exclusive new design features mean
. . . *consistent* quality production . . .
peak operating efficiency . . . minimum
maintenance, labor and costs!



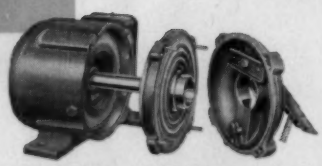
DESIGN FEATURES

*1. High inertia inverted motor provides "stored energy" for smooth, fast starts and positive picking (maximum inertia with minimum size) . . . prevents regeneration.

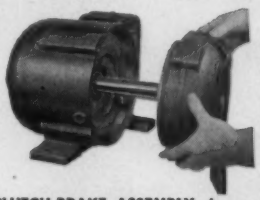


STREAMLINED FRAME
Easy to clean. Roomy terminal box.

KINETIC BRAKING ACTION
(See Feature 6)



CLUTCH-ACTUATING BEARING—A strikingly new and improved method of mounting. (See Feature 5)



CLUTCH-BRAKE ASSEMBLY—Improved, simplified. Readily removable as a unit. (See Feature 2)

The original and only loom power transmitter . . . plus many outstanding design and construction features never before incorporated in a loom drive!

Over 40,000 Diehl Power Transmitters have been in continuous operation on DRAPER LOOMS—*most of them more than six years!* The "BA" Power Transmitter is even *more* compact, *more* streamlined, *more* efficient and *more* easily installed and serviced than its famous predecessor.

It's an inverted-type high inertia motor combined with a fast, positive clutch-brake mechanism. Note the exclusive design features—the clutch-actuating bearing mounting . . . the kinetic braking action . . . the unitized clutch-brake assembly. These important advancements mean increased production . . . improved cloth quality . . . lowered operating costs . . . fewer shutdowns. *Write, wire or phone today for full information.*

plus these outstanding Features

*2. **CLUTCH-BRAKE ASSEMBLY**—Improved and simplified for positive action and ease of adjustment. Removes readily as unit for maintenance, without disconnecting motor from loom frame.

3. **PINION**—Free accessibility for installation and maintenance.

4. **SHAFT**—Large diameter, alloy steel, heat treated—assures long life, eliminates need for outboard bearing.

*5. **CLUTCH-ACTUATING BEARING**—New diaphragm mounting for frictionless clutch action, positive radial rigidity of bearing . . . eliminates fretting corrosion . . . means full self-alignment of bearing for maximum life.

*6. **KINETIC BRAKING ACTION**—For rapid, accurate stops. Particularly desirable for center fork detection looms.

7. **CLUTCH AND BRAKE ADJUSTMENT**—Simple and convenient. Provides visible check on brake alignment.

*8. **CLUTCH-SETTING INDICATOR**—Built integral with unit for instantaneous external checking of clutch setting.

9. **SAFETY LATCH**—Built integral with unit. Prevents accidental engagement of clutch.

10. **CLUTCH-LOADING ASSEMBLY**—Internally located, hence tamper-proof.

11. **SHAFT-END BEARINGS**—Arrangement simplified and improved. Two ball bearings and an extra large roller bearing assure maximum life.

** Exclusive feature—patent protected.*

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for longer valve life

in a variety of corrosive services

JENKINS NI-RESIST GATE VALVES

Where you encounter acids, salt and alkaline solutions, sea water, brine or other corrosive fluids, vapors or gases, you'll want Jenkins Ni-Resist Type 2 Cast Iron Gate Valves with type 316 stainless steel trim. They have a remarkable ability to withstand destructive corrosion and erosion.

In paper mill service, food processing, petroleum refining, chemical plants and other process industries, Jenkins combination of Ni-Resist type 2 cast iron and type 316 stainless steel, plus Jenkins extra *value* construction throughout greatly extends valve life.

Designed especially for corrosive services, the Jenkins Ni-Resist line of gate valves also has superior metal-to-metal wearing qualities. Copper-free, they will not discolor or contaminate products being carried in the line. Let the famous Jenkins Diamond be your guide when choosing Ni-Resist valves . . . it means longer, trouble-free service.

GET COMPLETE INFORMATION
from your Jenkins Distributor, or write Jenkins Bros., 100 Park Avenue, New York 17.

JENKINS VALVES

LOOK FOR THE JENKINS DIAMOND

TRADE JENKINS MARK SINCE 1864

Jenkins Bros.

Sold Through Leading Industrial Distributors Everywhere

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What you should know about

Why do they put "permanent waves"

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"flutes" in Union Boxes

in corrugated boxes?

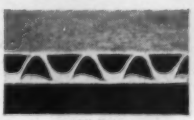
The small "waves," or flutes, in the center section of corrugated board are a vital box construction feature. Like bridge trusses, they absorb and distribute shock — provide extra rigidity for the walls of your shipping container.

Flutes are like bridge trusses

All flutes, as the illustrations show, are not alike. No one is "best." Each does a specific job. Selecting the type you should be using calls for a detailed analysis of your product. This is one small part of Union's complete package engineering service. These fundamentals, however, are excellent guideposts:

The corrugator forms the flutes

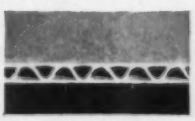
An "A" for cushioning



"A" flutes

"A" flutes were the first type used in corrugated box manufacture. They have the highest arches—about 3/16 inch. "A" flutes are generally used for fragile articles because their greater height offers extra cushioning protection and better stacking strength.

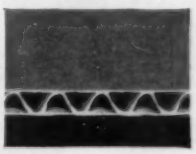
"B" flutes–smallest and stiffest



"B" flutes

"B" flutes are lower, stiffer than "A," have 42 per cent more flutes per foot. Because of reduced thickness, "B" flute board makes a neater package, takes up less warehouse and car space. Excellent for heavy items like canned goods which support their own weight, thus require less shock resistance.

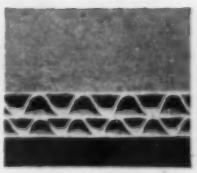
"C"—the in-between flute



"C" flutes

Half-way and happy medium between "A" and "B" are "C" flutes, probably the most commonly used today. They combine the best features of the other two and are often an excellent compromise.

Combinations may be needed



"C"-"B" flutes

Flutes may also be combined, one on top of the other, to form a double wall container. The combinations most generally used are "A"-"B" and "C"-"B." The double walls provide greater protection and cushioning, and are ideal for heavy duty containers.

Union Box engineers are always ready to help you determine the proper flute, or combination. You'll find, too, that the flutes in Union Boxes are consistently well formed—each of uniform height—each taking its full share of the load.

This sturdy construction is one of your best assurances of dependable performance of your corrugated shipping container.

union camp

Write for Union's free, informative booklet "Manufacturing Sheets for Corrugated Boxes."

UNION BOXES

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233 BROADWAY, NEW YORK 7, N. Y.

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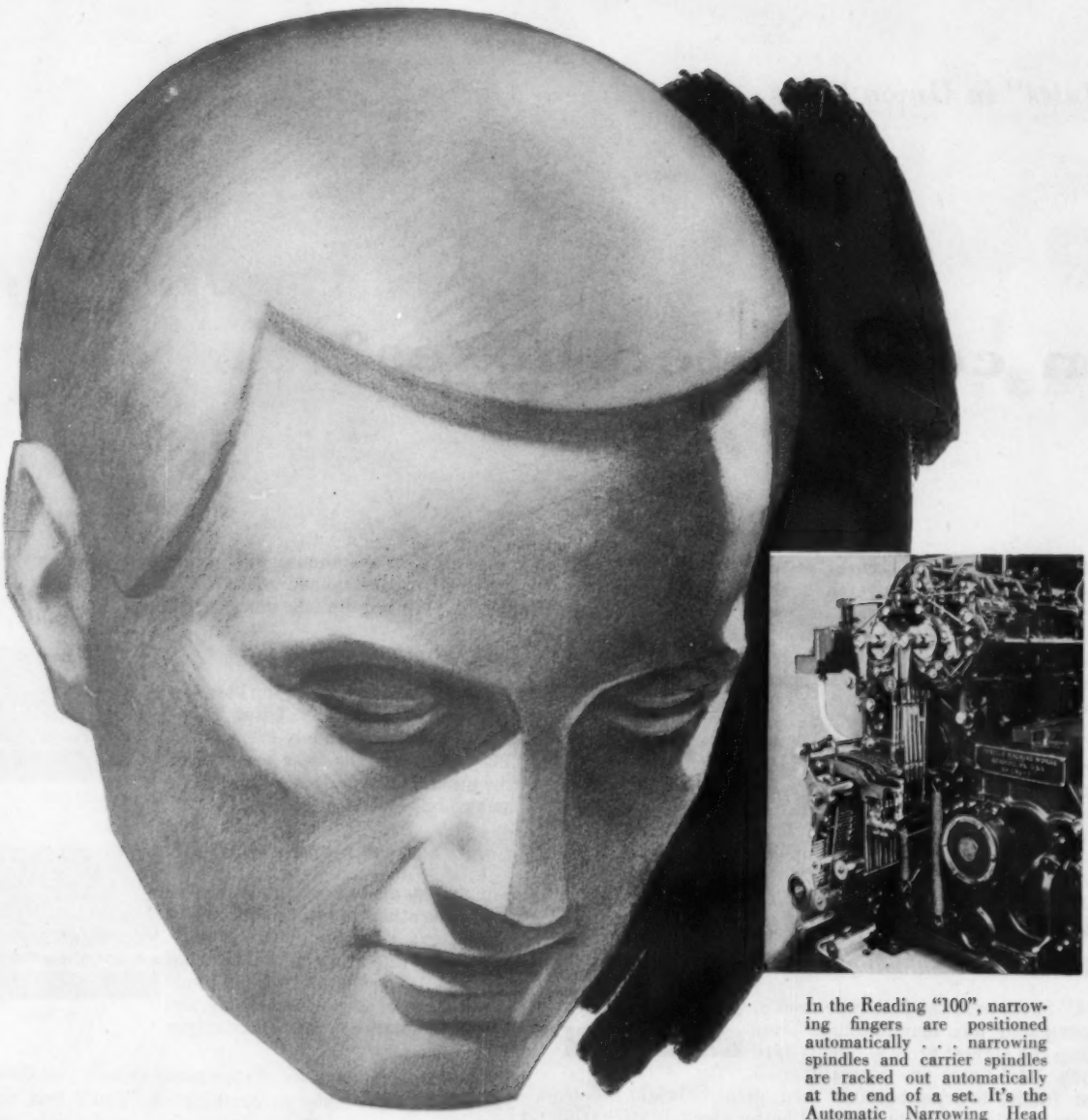


In the Reading "100", narrowing fingers are positioned automatically . . . narrowing spindles and carrier spindles are racked out automatically at the end of a set. It's the Automatic Narrowing Head feature of . . .

the machine that almost thinks for itself

The mill-proved Reading "100" is just about the nearest thing to a completely automatic machine as is possible in full-fashioned knitting. Every motion is automatic — and closely controlled — to assure continuous, uninterrupted production of superior-quality stockings at lower per dozen costs, and to make it possible for an operator to earn more money. Let us give you the mill-proved Reading "100" story.

Builders of:
The "Reading" CK-A Circular Knitting Machine
The "Reading" Tricot Machine
The "Reading 100" Full-Fashioned Knitting Machine
The "Reading" Full-Fashioned Outerwear Machine
The "Reading" Braiding Machine
Textile Spring-Beard Needles
Arrow Latch Needles

The "READING 100"
Full-Fashioned Knitting Machine

Knitting Machine Division
TEXTILE MACHINE WORKS, READING, PENNA.
Reconditioning Plant at Asheboro, N. C.
Builders of Textile Machinery Since 1900

← For more data, write this page number on Reader-Service card.

The "Famine" Phase of the Cycle

The famous old "feast-and-famine" cycle of textile business always gets a lot of attention during the "famine" side of the cycle.

For nearly a year now the industry as a whole has been bucking the downside, and a great deal of talk has been directed toward the causes of bad business and hopes for improvement.

As always, overproduction and lack of means for controlling output so that it stays reasonably in line with demand have been favorite subjects.

It is well that such thinking should be done by textile men. While the problems are by no means new, they still have not been solved. They may never be solved; but if awareness of them should lead to caution, some progress will have been made in easing the "famine" dip of the cycle.

The Real Problem

Most mill men recognize that the real problem is speculative production; that is, the fact that most mills are willing to produce goods, not against orders, but in the hope that the goods will sell and that prices will net a profit.

As Frank Rogers, vice president of Reeves Bros., put it the other day in a talk: "Overproduction is the biggest sin of our industry. The temptation is ever present, when we are running six days on a nice streamlined schedule and sales fall off, to continue on this schedule and put goods into stock with the expectation that the market will improve shortly and our inventories will be depleted."

The usual results are that prices are cut, buyers hold back to see if further cuts are coming, and goods pile up. Then the cycle swings into the "famine" phase.

Who started it? Mills. Why did they start it? Because they were willing to gamble.

Therefore the feast-and-famine cycle of textile business basically is the result of a risk-taking attitude of mill management.

What's the Solution?

Several things are suggested as possible solutions for this unsatisfactory nature of textile business. Many mill men would like to see some form of central planning and control, but laws prohibit it. Others think that better statistics on production and demand will help. Still others think that basic economic education is needed.

But the favorite solution seems to be the long-range possibility of production capacity declining and demand rising until textiles enter a period of unusual prosperity.

Undoubtedly, the textile industry must expand. The United States is in a period of growth, triggered primarily by a growth in population. No industry as basic as textiles can avoid growing with the economy and the population.

However, that does not necessarily mean that on a given date unprofitable mills will stop liquidating and all of a sudden there will be a tremendous spurt of mill building and expansion. Neither does it mean that mills will not still have the free choice of gambling on unsold production.

One fact that must be taken into consideration is that final consumption of textiles is now and has been far more level year after year than mill production of textiles. No amount of mill capacity, whether it is too much or too little, is going to change final consumption enough to talk about.

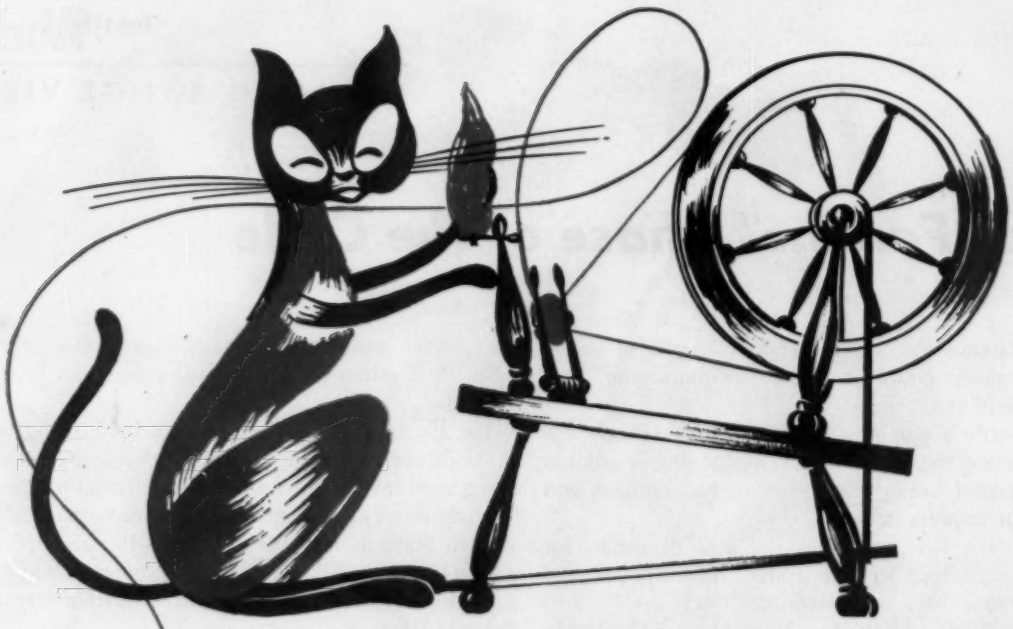
Profits Not Guaranteed

Better profits, therefore, are not going to be guaranteed.

It is inconceivable that production capacity will ever reach the point where every mill in the country will have to run at top speed for three shifts seven days a week. And so long as capacity is not exerted to that extent, mills will still have some leeway for indulging their pleasure in speculative production.

So the solution does not lie in some nebulous future in some cut-and-dried physical condition of the industry. If it ever comes, the solution must be in an improved caliber of mill management—one that is not so willing to gamble, one that is not so willing to cut prices and make under-the-counter deals, one that is not so willing to damage the industry and itself over the long pull to bail itself out of a short-term mistake it has made.

O. M. Thomas



TOW . . .

is it a new way to better thread?

A stronger thread, a more versatile thread, may lie along the Turbo Stapler route — the modern way to process synthetic fibers.

Tow processed on a Turbo Stapler can be given any hand — soft or firm — to spin into thread that will complement the fabric it will sew!

Tow processed on a Turbo Stapler can have a staple length up to fifteen inches — to spin into thread with greater tensile strength!

Tow processed on a Turbo Stapler can be control-heat-stretched for greatest individual fiber strength — to spin into a more shock resistant thread!

Tow processed on a Turbo Stapler can have low elongation — an added plus for many thread applications.

To manufacturers and spinners doing thread research and experimentation, we offer the experience back of the Turbo Stapler. It's the same experience that helped work the miracle of Turbo High-Bulk Orlon*.

*DuPont TM for its acrylic fiber.

TURBO
SINCE 1929

TURBO MACHINE COMPANY
LANSDALE, PA.
Makers of precision Heat and Steam Setting Machines, Crimpers and Tow Processing Equipment

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Is Industry Creating A New Breed of "Bonus Babies"?

THE STARTING SALARIES offered to this year's June graduates give the impression that industry is creating a new breed of "bonus babies." This is the term baseball fans apply to sturdy youngsters whose talent for hitting and throwing gets them payments of up to $100,000 and other benefits for signing a contract.

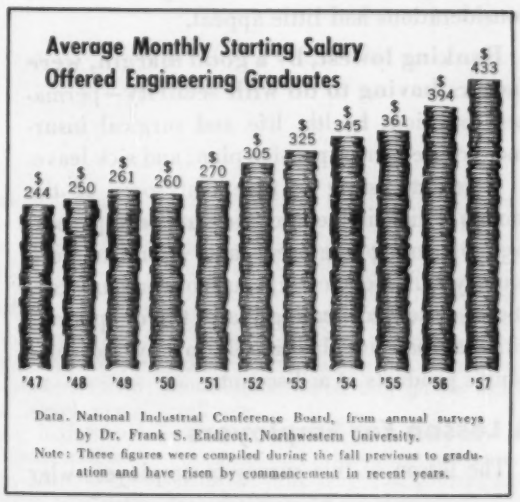
For several years industry's demand for young college graduates, especially in science and engineering, has outrun the number receiving degrees. Competition for these young people has steadily pushed up the starting salaries and has induced many companies to indulge in lavish recruiting programs. This year engineering graduates are being offered well over $400 a month, and even liberal arts graduates find numerous offers at $400 or more. Only ten years ago the salaries offered senior engineering students averaged less than $250 a month.

But any employer who assumes that high starting salaries alone will assure him the number of June graduates he wants is likely to be disappointed. A recent study by the McGraw-Hill Classified Advertising Division shows that most young engineers and scientists going into industry are more interested in their opportunities and in a company's future than they are in the size of their first paycheck.

Money Isn't Everything

In the McGraw-Hill survey, 2,596 recently-hired engineers and scientists employed in 57 companies listed the factors they had considered before accepting a position. The replies of the younger engineers and scientists—those with less than five years' experience — have great significance for employers who want to make any impression in the highly competitive market for college graduates.

- **Potential growth of the company** was listed by more young engineers and scientists than any of the 42 other items on the list as a factor that influenced greatly their decision in accepting a position.
- **Challenging opportunity** was second.
- **The company's prestige and reputation** ranked third.



Data. National Industrial Conference Board, from annual surveys by Dr. Frank S. Endicott, Northwestern University.
Note: These figures were compiled during the fall previous to graduation and have risen by commencement in recent years.

● **Progressive research and development program** was fourth.

● Starting **salary** ranked only **seventh.**

Job and Future Most Important

As a group, the factors relating to the nature of the job, its future and the company's future had by far the greatest influence in attracting young engineers and scientists to their present positions. These include three of the top four attractions—potential growth of the company, a challenging opportunity and a progressive research and development program. Other factors in this group are the company's facilities, quick advancement, self-direction or little supervision, chance to work in a certain field, small size of company and rewards for individual accomplishment.

The second most important group of attractions had to do with prestige. These include the company's prestige and reputation, executive or professional standing and association with leading men in the field. **Third in importance were financial considerations**—starting salary, regular salary increases, financing of relocation, paid vacations and holidays.

A less important group of factors influencing young scientists and engineers were essentially social. Geographic location and educational facilities in vicinity ranked fairly high. But recreational facilities, suburban or country living, pleasant housing and cultural considerations had little appeal.

Ranking lowest, by a good margin, were factors having to do with security—permanent position; health, life and surgical insurance; retirement or pension plan; and sick leave.

It is interesting to note that some of the factors which influenced the **smallest** percentage of young engineers and scientists were country club memberships, use of company car, at-cost or low-cost eating place, travel opportunities abroad and being able to buy the company's products at a discount.

A Lesson For Employers

The lesson of this survey to employers who hope to recruit more young engineers and scientists is clear. High salaries and other financial appeals are important. But, **at a time when high starting salaries are offered in abundance, our young graduates are interested even more in being with companies that will grow and in jobs that will permit them to grow. They are interested in jobs that offer opportunities for advancement, financially and professionally.**

* * *

Were the young scientists and engineers who participated in the survey trying to impress somebody with their motives? If so, it could only have been to impress themselves, for all were asked to return their questionnaires unsigned.

What Factors Influence the Job Selections of Young Engineers and Scientists?

Factors Influencing Decision Greatly	Percent Listing Factor
Potential growth of company	55%
Challenging opportunity	53
Company's prestige, reputation	44
Progressive research and development program	41
Geographic location	37
Permanent position	35
Starting salary	34
Educational facilities in vicinity	33
Regular salary increases	31
Chance to work on specific project, or in certain field	27
Company's facilities (laboratories, technical libraries, etc.)	25
Tuition for graduate study	25

Based on replies by recently-hired engineers and scientists with less than five years' experience to questionnaire distributed by McGraw-Hill Classified Advertising Division.

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nation-wide developments. Permission is freely extended to newspapers, groups or individuals to quote or reprint all or parts of the text.

Donald C. McGraw
PRESIDENT

McGRAW-HILL PUBLISHING COMPANY, INC.

Textile World

Volume 107, No. 8. August, 1957

COMBER OPERATION is explained to the Clinton High School textile students during a visit to Joanna Cotton Mills.

LAPS for the modern card at the school are furnished alternately by the three mills in the school district.

High Schools Help Train The TEXTILE MEN of Tomorrow

Clinton High School and seven other South Carolina high schools are turning out nearly 300 graduates each year who have had textile-manufacturing training. This training includes—

- **Textile designing**
- **Yarn and cloth calculations**
- **Machine operation and repair**
- **Production theory and practice**

ABOUT 16 HIGH-SCHOOL JUNIORS AND SENIORS will enroll for the textile course at Clinton High School, Clinton, S. C., next month. They are among hundreds of young men in high school in the Carolinas who are planning textile careers and getting early training in secondary-school textile classes.

Last year in South Carolina alone, 285 boys were enrolled in textile courses in eight high schools.

The textile course at Clinton is only one year old, but it is patterned after courses at other schools in the state that have operated successfully for many years. Every year graduates of these schools take their places in the state's textile plants or enter college to obtain higher education.

Young Men Are Needed

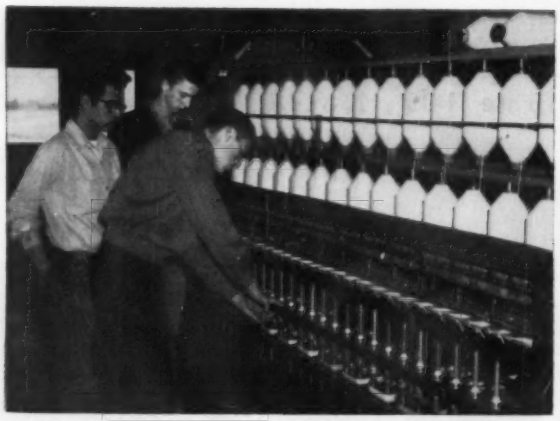
One of the major problems of textile mills is that of attracting and retaining desirable young workers. Often a mill will recruit and spend much time and money training high-school graduates only to have them quit and go into another industry. Many methods have been used to try to cope with the problem.

Textile training at the high-school level is one way of encouraging potential textile employees. This type of training is on the wane in most textile states but is growing in popularity in the Carolinas. Proponents of high-school training cite these advantages:

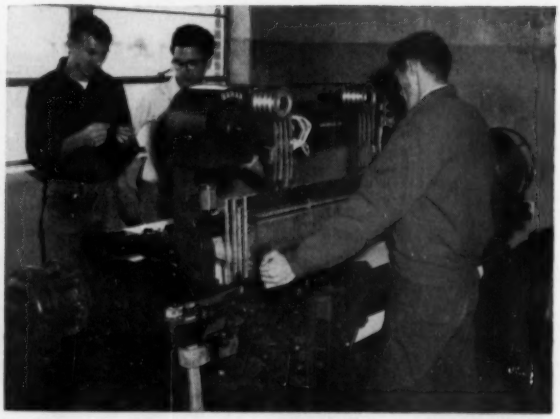
1. Students learn the rudiments of textile manufacturing and can advance much faster when they go on actual mill jobs.

2. Safety, good housekeeping, cooperation, and other important phases of textile work taught help make better employees of the graduates.

3. While taking the course, a student can decide whether or not he



FILLING is spun on this section of a spinning frame. Warps are furnished by the sponsoring mills.



CLOTH woven for practice purposes on the school's four looms is used in the girl's home-economics classes.

wants a career in textiles and thus sometimes avoids much wasted time and effort on his part and that of his prospective employer.

4. High-school training can point up the need and lay the groundwork for a college course in textiles.

5. The records of students taking textile training will aid mills in giving encouragement, summer employment, and scholarships to deserving young men.

First School Was in Columbus, Ga.

The first textile vocational school of which we have record in the South was organized in Columbus, Ga., about 1900. This school was conducted by the Presbyterian church in a downtown office building.

The school was later moved to 2400 Second Ave. and was known as the Junior Industrial School. This school later developed into a regular high school known as Industrial High School with major emphasis on textile training. It was the first industrial high school in the U. S. under public-school supervision.

About 20 years ago a new school known as Jordan Vocational High School was built, and the textile machinery from the industrial school was moved into it. But the machinery was obsolete, instructors were indifferent, and interest in textile training lagged. At present, there is no high-school textile training in Columbus.

In 1924 textile training was begun in the Parker School District, Greenville, S. C. A textbook, *Cotton Mill Mathematics*, was written for use in the school and also for adult vocational classes. One of the co-authors, Professor Thos. H. Quigley, is now head of industrial vocation training in Georgia.

The textile courses at Parker High School are still very popular. An average of 100 pupils are enrolled in the classes every year. Three full-time instructors are used for the classes, which include all phases of textile production as well as mathematics and designing.

Other Schools Teach Textiles

Other high schools in South Carolina that have active textile training courses include Chester High School, with an average of 30 pupils per year for nine years; Palmetto High at Williamston, 40 pupils per year; Lancaster Senior High, 36 pupils; James F. Byrnes High School, Lyman, 26 pupils; Langley-Bath-Clearwater High School, 12 pupils; and Fort Mill High School, 25 pupils.

Beginning its textile courses last year, Clinton High School is representative because it uses the best features of the established schools in its program. A separate building to house the textile machinery was erected adjacent to the new school building at Clinton.

Clinton, Lydia, and Joanna Cotton Mills are backing the project. The mills, together with Industrial Supply Co., Clinton, and Bahan Textile Machinery Co., Greenville Textile Supply Co., and Steel Heddle Mfg. Co., all of Greenville, donated the modern machinery. The mills also furnish cotton laps and warp beams for the school.

The machinery includes a card, four heads of drawing, a roving frame, a 60-spindle section of spinning, and four looms. Auxiliary equipment includes a bench grinder, work table, gauges, hand tools, and a supply of spare machine parts.

A. H. Clark, a textile-engineering graduate of Clemson College, is instructor at Clinton. Students are from the 11th and 12th grades, and they receive two school credits upon completion of the two-year textile course.

Students Visit Mills

Classes are held 2½ hrs. each day. Subjects taught are cotton textile manufacturing I and II, theory, laboratory, mathematics, designing, machine operation, and fixing. Safety, good housekeeping, and other phases of mill work are emphasized in the classes. Each student has accident-insurance coverage while in the shop.

A wall chart shows the progress of each pupil. Each item on the chart is checked off by the pupil when he thinks he has mastered it. The instructor then reviews the item with the pupil.

To further assist the boys enrolled in the textile course at Clinton, the mills in the school district arrange mill visits for them so that they can learn some of the problems of production. The supply houses help keep them informed of new products and processes.

Cloth Woven Is Used

Cloth woven by the textile students is used in the school's home-economics class. Various items are made from the cloth for the school band and athletic teams and for church use.

The textile-training room and machinery are used at night for fixing classes of the adult vocational-education program. The overseers and supervisors of spinning and carding at Clinton Cotton Mills are the evening-class instructors. In this way, the school serves a dual purpose.

The sons of employees of Clinton, Lydia, and Joanna Cotton Mills are given preference for enrollment in the textile course at Clinton. There have been many applicants for the training. It is hoped that the enrollment can be increased this year and that the school will be a vital force in stimulating interest in textiles in this region.

How To Apply the PROCION DYES

This new series of dyes appears to have considerable value in producing bright, fast shades on cellulosic fibers. Here's a brief outline of how the dyes are worked on—

- **Cellulosic fibers**
- **Wool**
- **Silk**
- **Polyamide fibers**

By WALTER SEKULES

ONE OF THE NEWEST RANGES OF COLORS is the Procion series, made by Imperial Chemical Industries Ltd. in England.

These dyes are particularly suited to cellulosic fabrics but also can be used on chlorinated wool, silk, and nylon.

An outstanding characteristic is that these colors work best from a cold or lukewarm bath, from which well-exhausted, fast shades are dyed.

These dyes become fixed by direct chemical linkage to the cellulose molecule under alkaline conditions. The range at present consists of 10 colors that produce bright shades in dyeing or printing.

These dyes are anionic, are readily soluble in cold water, and have good stability in water up to 10° in hardness. The dyes are compatible with each other and anionic assistants but cannot be used with cationic materials.

The colors work well in continuous-dyeing operations because substantivity in neutral, salt-free solutions is actually quite low and tailing off of color is minimized.

The Procion dyes contain a reactive group that is responsible for the ultimate fastness of shade, but they are relatively stable when shipped. The solutions are stable for four hours if they are made up at 30 to 50° C. and not boiled or contaminated with alkali. The powdered dye is simply dissolved in warm water and is ready for use.

How To Dye by Batch Methods

To use Procion dyes in batch processes such as jigs or becks, the dyebath is set cold with the dyestuff alone. After the goods have been thoroughly saturated with the color, common salt or Glauber's salt may be added over a 30- to 45-min. period to promote dye exhaustion. The time will vary with individual dyestuffs. During this phase of the dyeing, the Procion colors level well.

When the bath shows little change toward further exhaustion, a soda-ash solution is added. The alkali causes the color to combine with the cellulose, and no further leveling is possible. The goods are run for 1 hr. in the alkaline bath; then they are given a hot soaping and rinsing to remove uncombined color.

Caustic soda is not suitable as an alkalizing medium because it tends to make the Procion dyes unreactive.

The process outlined above is applicable to hank dyeing of yarns; package dyeing of knitted fabrics, tufted carpets, and woven fabrics; and also to some fabrics that are dyed in jigs.

In all cases, a good soaping and neutralization should follow dyeing to remove uncombined color and free alkali.

Here Are Three Pad Methods

Some fabrics of dense construction or that contain highly twisted mercerized yarns respond best to some form of padding operation. One method consists of padding the Procion dyes on the goods and running them directly into a winch or jig set with cold water containing common or Glauber's salt and soda ash.

Pale and medium shades can be produced satisfactorily by padding the goods in a mixture of Procion dyes and sodium bicarbonate, drying them, and following up with the usual soaping. The method works well for cotton, rayon, or linen.

For heavy shades, the color is padded on the goods. Then they are dried and passed through an alkaline bath for fixation. In another system, the goods are not dried between padding in color and running through the alkaline bath. Deeper shades are produced when the goods are dried between stages, but better penetration is claimed for the wet-on-wet method.

Spun-viscose fabrics appear to dye best by the pad-bicarbonate method; the continuous processes tend to produce a frosted surface appearance.

Procion Colors Dye Proteins

The Procion dyes react with the amino groups in protein fibers such as wool and silk and also with synthetic protein fibers such as Vicara, and the nylon-type fibers.

However, for wool only the ingrain dyeing methods are recommended for either normal or normal chlorinated wool mixtures.

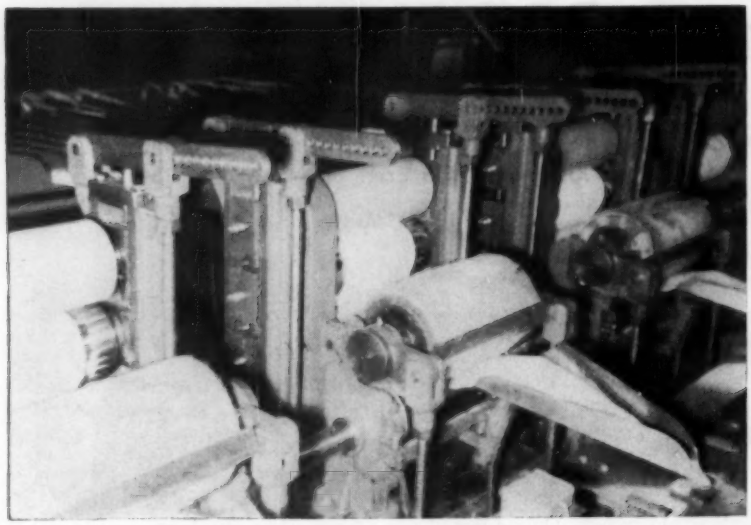
Wool-cotton blends can be dyed by batch methods, but the cotton will dye a heavier shade than the wool.

Bright shades of excellent fastness can be produced on silk with the Procion dyes by using the cold-bath method with Glauber's salt. Exhaustion by means of soda ash or weak acid follows; then the goods are soaped and rinsed. Alkaline exhaustion appear to produce more-level dyeings.

To dye nylon, Procion dyes are most successfully applied to loose stock or staple because it is difficult to produce level dyeings on piece goods. The shades produced on staple are of excellent all-around fastness.

There have been some printing applications developed for Procion dyes. Print pastes made up of dye, sodium alginate, urea, and sodium bicarbonate have been successful. The steaming time is not critical—anywhere between 2 and 60 mins. will do—and the goods may be stored before or after steaming without damage.

Procion dyes are not suitable for printing alongside vat colors but can be worked with Soledon or Brentogen colors if neutral steam is used in fixing the colors.



DOUBLE BREAKER, developed by French Worsted Co., produces a fiber diagram similar to wool.

Now—It's TOW-DYED ORLON At French Worsted Co.

- Colored hugh-bulk Orlon yarn spun from dyed tow is well blended to insure good color and shrinkage uniformity.

- Slightly less than half of the fibers are treated at 240° F. under 10 lbs. of pressure. The shrinkage is controlled to 24%.

By VICTOR SAXL, Stellamcor, Inc.

SOFTNESS, WARMTH, AND EASY WASHABILITY have helped make high-bulk Orlon yarns popular for knitted outerwear. These yarns are now being produced in color from tow-dyed Orlon by French Worsted Co., Woonsocket, R. I.

When colored Orlon is run, blends from eight cases of tow are run together to insure color uniformity. All tow is given two extra gilling operations to make the color still more uniform and to give a more-uniform shrinkage.

The 3-den. 470,000-filament Orlon tow is treated on the Turbo stapler to stretch and break the filaments. Tow-dyed sliver runs through this machine at 85 to 90 lbs. per hr.; natural-colored tow is run at 100 lbs. per hr.

The sliver is crimped as it leaves the stapler, and it weighs about 155 grains per yard at this stage. A Turbo fiber setter is used to steam slightly less than one-half of the sliver at 240° F. under 10 lbs. of pressure.

Shrinkage is checked regularly by measuring 50 ins. of sliver with the crimp removed. Clips are used to mark the 50-in. lengths.

The sliver is then placed loosely on top of a full can and run through the full cycle of fiber setting. After setting, the sliver is straightened out and measured. Each inch of contraction equals 2% shrinkage, and the shrinkage is controlled to 24%.

How the Double Breaker Is Used

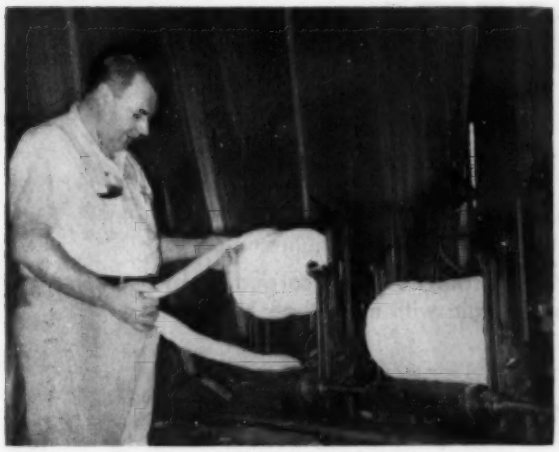
A double breaker, developed by French Worsted Co., is used next to process the sliver. This breaker reduces the maximum staple length of the fibers from about 8 ins. to about 6¼ ins.

The double breaker has four heads; and three cans of relaxed sliver and three cans of unrelaxed sliver are fed to each head. The unrelaxed sliver weight of 285 grains per yard. After this operation, the fiber diagram closely machine is 1,041 grains per yard.

A draft of 3.6 produces a sliver weight of 285 grains per yard. After this operation, the fiber diagram closely resembles a wool-staple diagram.

Gilling is done on two conventional SACM intersecting gill boxes. The first gill is a four-head machine with a full head of fallers with 13 pins per inch. Five ends are creeled at the back. The draft of about seven produces a sliver weighing 210 grains per yard.

A six-head SACM gill box processes the slivers next. Six ends of sliver are creeled at the back, and they are processed with a draft of six so the sliver weight remains unchanged at 210 grains per yard. This operation further blends the fibers and helps produce yarns of more-uniform dyeability



GILLING is done on two conventional intersecting gill boxes to further blend the fibers for better color and shrinkage.

GILL REDUCER with an Autoleveller has helped eliminate one intersecting gilling operation and reduce sliver unevenness.

and shrinkage. After this operation, the sliver is stored in cartons or trucks before it goes to the spinning department.

Evenness Has Improved

The first drawing operation is done on a Holdsworth gill reducer equipped with an Autoleveller. This equipment has helped eliminate one intersecting gilling operation, and long-term unevenness has been reduced.

The first gill reducer has one head, and 11 ends are creeled at the back. A draft of eight produces a sliver weighing 284 grains per yard. This machine delivers 80 yds. of sliver per minute or about 190 lbs. per hr.

A second intersecting gilling operation is done on a one-head, three-delivery Holdsworth gill reducer with no Autoleveller. Two ends are creeled at the back, and the draft is eight; the sliver produced weighs about 72 grains per yard. Production is about 145 lbs. per hr. for the three deliveries.

How Long-Draft Roving Works

A 10x5 Whitin Quik-Set roving frame processes the sliver next. This frame has the Whitin long-draft system, three rolls with two aprons for fiber control, 2-in. front bottom rolls, and 1½-in. back bottom rolls.

The front top roll is 2½ ins. in diameter, and the middle roll is 1 in. in diameter. The weight on the rolls is read directly on a gauge located on the front surface of the arms. Ratch changing is done by turning a handle.

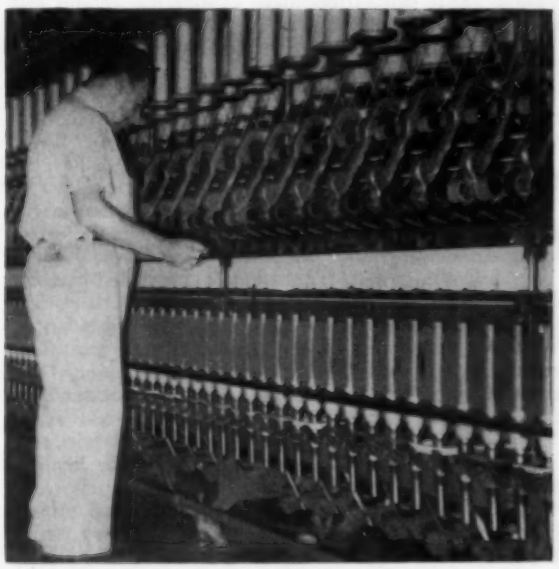
Here is the setup for the 102-spindle frame:

Ratch	—7⅛ ins.
Draft	—10
Twist	—0.7 tpi.
Feed weight	—71 grains per yard
Roving weight	—7.1 grains per yard
Spindle speed	—750 rpm.

Four Carniti ring spinning frames spin the roving from the Quik-Set roving frame. Each frame has 180 spindles on each side. The gauge is 3½ ins., and the ring diameter is 2½ ins.

CONTINUED ON PAGE 194

ROVING is done on 10x5 Quick-Set frames. Three rolls with two aprons give good fiber control. The ratch is 7⅛ ins.



SPINNING 26s yarn on these Carniti frames from 3-den. fibers results in an average yarn unevenness of 10%.

Contests Promote SAFETY In Georgia Mills

Georgia mills have reduced accident-frequency rates 19.3% in the last eight years.

This record is due largely to a program of safety contests carried on by the Cotton Manufacturers Association of Georgia with more than 100 mills participating.

Plaques are presented each year to the first- and second-place winners in each of the five groups. Awards are also given mills, other than contest winners, who complete the year without a lost-time accident.

By **WILMER C. WESTBROOK**, Assistant Editor, TEXTILE WORLD

FOR THE LAST EIGHT YEARS, the Cotton Manufacturers Association of Georgia has sponsored an annual safety contest among Georgia mills. Mills are placed in five groups, based on number of employees; and judging is done on the basis of a mill's accident-frequency rate multiplied by its severity rate.

The contest does much to promote accident prevention in the mills of the state. Last year 114 mills participated. This year 127 mills entered the contest. In the eight years since the first contest, the accident-frequency rates of participating mills have been reduced an average of 19.3%.

All mills promote safety to some extent. In general, here is the normal program:

The personnel office issues general safety rules and policies formulated by management. Accident records are tabulated, and reports are made periodically to department heads. In the mill, supervisors give safety instructions and keep on the lookout for hazards and unsafe actions. Various safety committees make periodic inspections and reports.

In many mills, safety slogans and posters are used on bulletin boards and in rest rooms, canteens, and other places visited frequently by employees. Safety literature is distributed by insurance companies, associations, and the plant papers or magazines.

How Mills Are Grouped

Group	No. of employees
A	Up to 249
B	250 to 499
C	500 to 749
D	750 to 999
E	1,000 and up

What Makes the Difference?

With standard safety practice being almost universally accepted, why is there so much difference in the safety records of various mills?

To find the answer, TEXTILE WORLD visited the five Georgia mills that won first-place awards in the 1956 safety contest and a number of mills that did not win. We found that most of the standard safety procedures were being followed in these mills, both winners and nonwinners, and that each mill had some variations from accepted practice.

The most significant facts turned up are:

1. Safety can't be mass-produced. It must be handled on an individual, person-to-person basis.

2. It is a daily procedure. Periodic drives and promotions have little effect.

3. Frequent reviews and revisions in existing safety procedures are necessary. The same program communicated in the same way loses its punch with repetition; and new machines, processes, and procedures eliminate some hazards and create others.

The old phrase that you can't get more out of anything than you put in it is true of accident prevention. Every one of the winning mills works continually on safety. Not one of them believes that a safety program will run itself or that the mill can relax now that it has established a good record.

The management of these mills is convinced that accident prevention is good business. Everybody loses when an accident occurs. The employee often loses wages and suffers physical distress. The mill loses because production is lowered, workmen's compensation insurance rates are increased, and employee morale is lowered. The customer often loses too because accidents affect quality and service.

The Goal: Safety-Consciousness

Many mill men concentrate on phases of manufacture that directly affect profits. They overlook some of the things that consume profits. As the superintendent of one of the contest-winning mills put it: "You can't win by driving for high profits in manufacturing if you have to pay out those profits for workmen's compensation and for settling medical and disability claims."

The conclusion seems to be that the safest mills are those where everyone from the manager on down the line is safety-conscious every day.

Much can be learned from the accident-prevention practices of mills with good safety records, and on the following pages TEXTILE WORLD gives a report from each of the five mills that won first place in their respective groups in the annual safety contest.

Group A–

Accidents Cut at Aldora By Close Supervision

• In the belief that a clean work place is a safe work place, Aldora Mills, Barnesville, Ga., is kept spotlessly clean. Close supervision helps to detect and correct unsafe practices and conditions.

General Tire & Rubber Co.'s Aldora Mills at Barnesville, Ga., has compiled an enviable safety record. As a result, the mill has won first place for Group A in the Eighth Annual Safety Contest sponsored by the Cotton Manufacturers Association of Georgia.

"Aldora Mills has no specific formula for accident prevention," says C. M. Neuner, plant manager. "The usual safety practices are carried out, but we believe our good safety record is due to close supervision and attention to all details, however small."

The present safety program was begun in 1954; and Mr. Neuner explains that safety is publicized at every opportunity. Supervisors develop a competitive spirit among workers, and everyone at Aldora is proud of their safety record.

Having fewer than 250 employees, the management and supervisors at Aldora have closer contact with the workers than is possible in larger mills. The supervisors push safety continuously and bear down on unsafe practices. The workers have become convinced that accident prevention is for their benefit.

EVERYONE AT ALDORA is proud of their safety record and the plaque won in the eighth annual safety contest.

Two Groups Make Inspections

Safety rules are strictly enforced. Every injury, regardless of how slight, must be reported immediately. Employees are not allowed to do unauthorized work; for example, a fixer cannot replace electrical fuses.

Plant safety and housekeeping inspections are made monthly by a committee composed of the master mechanic and the department heads. A written report of each inspection is given to all supervisors and section men. Another committee, alternating between the different shifts and composed of section men, also makes complete plant inspections.

Guards are placed on all machines wherever practical. Machine accidents have been almost eliminated. Most accidents that are reported are cuts and bruises.

Accidents resulting from improper handling of materials are practically nonexistent because the heaviest object that is manually lifted is a 6-lb. package of yarn. All stair treads and ramps have nonskid surfaces.

Machine Guards Protect Workers

Formerly the loom creels were so high that some of the workers strained themselves reaching the top spools. To eliminate this hazard, the creels were lowered and lengthened. Machine guards protect the weavers from moving gears and chains.

Several near-accidents from falling beams resulted in the mill designing a unique safety lock. A stud on the top of the twister fits into the loading arm of the beam truck and prevents it from shifting position while a beam is loaded or unloaded.

As a precaution against explosions and fires, all flammable and combustible materials are stored in fireproof rooms. Fusible links hold the thick metal doors so that they will be instantly closed in case of fire.

Aldora believes that clean surroundings and good housekeeping are conducive to safe working habits; therefore the mill is kept almost spotlessly clean. Walls, ceilings, doors, and windows are free of dirt and lint. Floors have been sanded, sealed, and varnished. Boxes, trucks, beams, and cans are all placed in orderly manner in designated areas.

Smoking Booths Provided

No smoking is permitted in rest rooms or canteen. Glass-enclosed booths are placed in central locations in the mill for smokers. Switch panels and other necessary projecting obstructions are painted with contrasting stripes for easy visibility.

Up-to-date safety slogans and posters as well as other notices and announcements are posted on neat bulletin boards at strategic locations. To keep informed on the subject, the supervisiors periodically attend safety meetings where films are shown or lectures delivered.

Although everything possible is done at Aldora to prevent accidents, adequate provisions have been made to treat injuries when they do occur. A well-equipped first-aid room is adjacent to the main offices in the mill. This room contains everything for the injured from a Band-Aid to a bed.

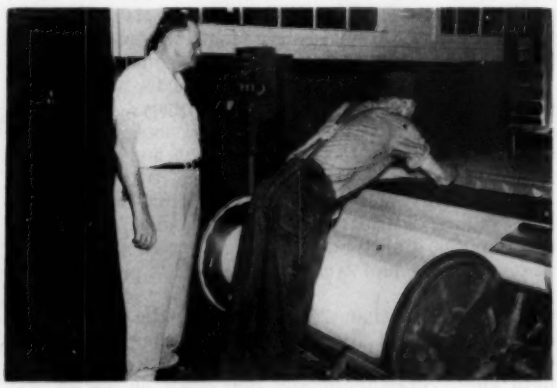
Aldora weaves tire fabric from purchased yarn. About half the mill's production is on nylon and the balance is rayon. The type of fiber used is an aid to safety because there is less fly and lint; also, a lower relative humidity is needed than was the case when the mill used cotton.

Group B–

Chicopee's 3-Point Program For Accident Prevention

• The Athens Div., Chicopee Mfg. Corp., Athens, Ga., places responsibility for accident prevention equally on management, supervisors, and workers. Safety is accepted as a regular part of the daily routine in this mill.

EMPLOYEES cooperate by reporting and getting first aid for every injury, regardless of how slight.



SUPERVISORS are always alert to spot practices or conditions that can be improved safetywise.

Chicopee Mfg. Corp.'s Athens Div., Athens, Ga., believes that three things are necessary for a good safety record.

1. Management must show an interest and take an active part in the promotion of safety.
2. Supervisors must be carefully selected and trained in accident-prevention work.
3. Employees must be cooperative and willing to obey all safety rules and regulations.

The personnel director of all mills in the Chicopee group is head of an over-all safety program. Each mill in the group develops a program within this framework to fit its own particular needs.

Supervisors make safety a part of the everyday job. They talk to employees singly and collectively. Periodic group meetings of 25 or 30 employees are held in the mill's conference room.

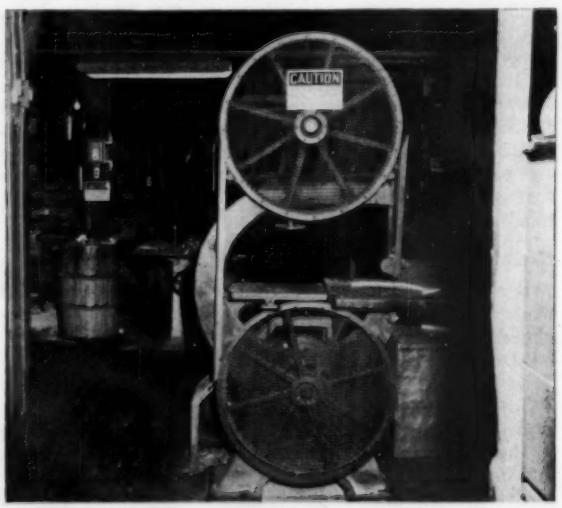
Committees Inspect the Mill

A plant committee composed of the superintendent and all supervisors meets once a month to discuss safety matters. Three men from this committee make an inspection of the entire plant and render a written report.

A departmental safety committee of one supervisor and two employees investigates every accident in the department that requires medical attention. A written report of its findings is given by the committee to the department head, superintendent, and plant manager.

Both monthly and quarterly reports are made of all accidents in the plant and also of safety recommendations. These reports are given to all members of management, supervision, and safety committees.

A representative of the mill's insurance carrier also makes periodic plant inspections and recommendations. He conducts six safety meetings a year for all supervisors. The insurance company furnishes training films for supervisors and posters for the mill's bulletin boards.



GUARDS AND WARNING SIGNS are placed on moving parts of all dangerous machines throughout the plant.

Humidity Was Cut 10%

The Athens Div. of Chicopee produces light fabrics such as surgical gauze from 30s and 40s cotton yarns. For a long time, there was a belief that a relative humidity of at least 85% was necessary in the weave room.

After a number of accidents from slips and falls on the wet floors, it was decided to reduce the humidity to 75%. Some difficulty was experienced at first; but now the weave room runs better than it did with the higher relative humidity, and the wet floors have been eliminated.

Bottles caused some accidents; so all the vending machines were changed to deliver soft drinks in paper cups instead of bottles.

Guards are placed over belts and other exposed moving parts of machines.

Trucks, dollies, slings, and other movable equipment that can be bumped into or tripped over have contrasting black and yellow stripes to make them more conspicuous.

To make the people at Chicopee more safety-conscious, an annual drawing for prizes is held. To be eligible for the drawing, an employee must work in a department that has no lost-time accident during the year. The ones drawing the lucky numbers can take their choice from a variety of prizes, including toasters, pressure cookers, deep fryers, electric razors, etc.

The Mill Won Two Plaques

Chicopee gives a barbecue for all its employees upon the completion of 1,000,000 accident-free manhours worked. The Athens Div. had a barbecue last year and again this year.

The company has a plaque that is presented to each mill in the group when 1,000,000 manhours have been worked without a lost-time accident. The name of the Athens plant has been engraved on the plaque, and it will keep it until another mill in the group meets the requirements for temporary possession.

The Athens mill believes its good safety record is due to its three-point approach to the problem.

Group C–

Safety Is Part of the Job At Callaway's Unity Plant

• There's no beating around the bush about safety at Callaway's Unity Plant, LaGrange, Ga. A realistic approach to the problem of accident prevention is taken, and each worker is made to realize his personal responsibility.

The Unity Plant of Callaway Mills Co., LaGrange, Ga., was the first-place winner of Group C (500 to 749 employees).

The management at Unity does not attribute its good safety record to any one specific thing. Accident prevention is practiced day-to-day without any particular formula.

A committee composed of both men and women non-supervisory workers inspects each department periodically on each shift. A report of the inspection is typed and given to the appropriate overseers for follow-up.

Each month one member from each of the departmental committees joins a group that makes a complete plant inspection. Membership in the committees rotates among the employees.

Plant bulletin boards display safety posters and slogans from the National Safety Council, Elliott Service Co., and others. Unity is self-insured and has no inspections or other services from an outside carrier.

PLAQUE is admired by safety committee members (left to right) Ray Bordens, Herbert Green, and James Bonner.

File Is Kept for Each Worker

Safety is particularly emphasized to new employees. After the induction, which includes an introduction to safety rules and regulations, the employee is given a copy of the mill's safety rules. The overseer reviews these rules and regulations with the new employee before he or she is placed on a job.

A signed statement that the new employee understands what is expected of him safetywise is placed in his individual file in the personnel office.

Every injury must be reported, and a copy of the report is placed in the employee's file. If the records show that

a particular job is causing accidents or that an individual is accident-prone, an investigation is made to find and correct the fault.

A recap and annual statement is made of all industrial accidents. A study of the record shows that most of the accidents in this mill are caused by slips, falls, and lifting.

The annual safety report lists all accidents by departments in the mill. Each mill in the Callaway group also makes these reports. A competitive spirit has been developed between departments and between mills in accident prevention.

Injuries Are Treated by a Nurse

In the mill, particular attention is given to safety devices. Materials handling is done mechanically wherever practical. Many of the machines have special guards in addition to the ones with which they were originally equipped. Nonskid material is cemented to all stair treads and ramp surfaces.

Although Unity makes every effort to prevent accidents, it is prepared for emergencies. A completely equipped first-aid room is maintained in the mill. The company nurse makes two routine trips to the mill each day to follow up on accident reports.

The nurse is subject to call whenever needed. If necessary, she takes the injured person to a doctor and then maintains close follow-up, even after the employee returns to work.

At Unity, safety is considered as much a part of the daily job as production and quality. No halfway measures are considered in accident prevention. Everyone in the plant understands that enforcement of the safety rules is in the best interest of all and that there are no exceptions.

Unity believes that safety should be handled in an impartial, realistic manner, like production, costs, and quality. Therefore accident prevention in this mill is an integral part of everyday business.

Group D—

Follow-Up Methods Are Used In Dundee's Safety Program

• Dundee Mills has won many awards in the Annual Safety Contests. Plant No. 1, Griffin, Ga., won first place in Group D in 1955 and again in 1956. One of the keys to its success is close follow-up of everything pertaining to safety.

THE NO. 1 PLANT OF DUNDEE MILLS, INC., GRIFFIN, GA., was the first-place winner in Group D of the Eighth Annual Safety Contest. This mill has a consistently good safety record, having won second place in 1954, first place in 1955, and first place again in 1956.

Other mills of the Dundee group also have outstanding safety records. Plant No. 3, Griffin, has not had a lost-time accident in two years.

The present safety program was begun about five years ago with the help of the mill's insurance carrier. A representative of the insurance company helps train supervisors, furnishes publicity material, and makes periodic inspections of the plant.

Safety Starts the First Day

Safety starts at Dundee with the induction of new employees. They are given a recap of the mill's safety record and thoroughly instructed in safety rules and regulations. The fact that they are to report every injury to the supervisor is particularly stressed during the induction period.

When an employee has an industrial accident requiring medical attention, he is not sent to the doctor but is conducted personally by his supervisor. Close follow-up is made on all such medical cases even though they do not involve lost time.

DUNDEE MILLS' Plant No. 1 is a consistent winner of plaques awarded by the Cotton Manufacturers Association of Georgia.

The safety committee at Dundee is composed of the superintendent, assistant superintendents, and overseers, with second hands serving alternately. The plant office manager acts as secretary for the committee.

All Accidents Are Reviewed

At monthly meetings, the committee reviews all accidents requiring medical aid that occurred during the month. Causes of the accidents are analyzed and action taken to prevent a recurrence.

One overseer and one or two second hands from different departments make a complete inspection of each department after the committee meeting. Written reports of their findings are given to the appropriate department heads and supervisors. Two weeks later, the same men make a follow-up inspection. Reports of the two inspections are read at the next committee meeting.

Records are kept in each department of all accidents, whether or not they required first-aid or medical treatment. The overseer and second hand personally investigate every accident. A follow-up check is made next day. If medical care is necessary, the attending physician is also contacted.

Periodically, the names of all persons having accidents requiring medical care are posted on the plant bulletin boards. Opposite the names are the type of injury, how it was caused, and its cost.

Bulletin Boards Show Record

The bulletin boards also show the number of manhours worked since the last lost-time accident and the best previous record. This record is brought up to date weekly. The bulletin boards also contain safety posters and slogans that are changed every week. Some posters are supplied by the insurance carrier.

In the mill, every effort is made to protect the workers from moving parts of machines and portable equipment. Machine guards and rails are used wherever practical. But the fact that no machine can be made accidentproof is stressed. Emphasis is placed on the responsibility of each individual for accident prevention.

Conveyors, hoists, and lift trucks are used in many places to reduce manual lifting. A shop-made truck to place the top beam on terry-cloth looms is an example of the efforts made to eliminate lifting accidents.

Formerly, the beam was placed on the loom manually, and several near-accidents resulted. Now, the lifting arms of the truck place the beam in position with a minimum of effort and with no danger to the operator.

Annual Bonus Is Given

A good portion of a second hand's time at Dundee is spent showing both old and new employees the safest work methods. Any new machinery or any change in routine work is checked closely for safety hazards. Any employee changing jobs is given safety instructions in the new job.

To stimulate interest in plant safety, the company gives a bonus every year to the superintendent, overseers, and second hands in each department with an accident-free record.

Group E—

At Martha Mills— "Make Things Safe, But Avoid Pressure"

• The employees of Martha Mills, a division of B. F. Goodrich Textile Products, Thomaston, Ga., have worked more than 11,000,000 manhours without a lost-time accident. Safety is incorporated in every job, every day, in this mill.

B. F. Goodrich Textile Products' Martha Mills, Thomaston, Ga., has an enviable safety record. The mill was winner of first place in Group E of the Georgia safety contests in both 1955 and 1956. In addition, this plant won second place awards in 1950 and 1954.

Employing more than 2,000 persons, the mill has operated since Oct. 1, 1954, without a lost-time accident. In this time, a record of over 11,000,000 accident-free manhours has been established.

The safety program at Martha Mills is under the direction of S. H. Black, personnel manager. Mr. Black has this to say about safety work in the mill:

"We know that people do not deliberately injure themselves. We assume that they will work safely if they are properly instructed. We make every effort to safeguard the employees and to train them in accident prevention.

CONTINUED ON NEXT PAGE

GENERAL SUPERINTENDENT TURNER SCOTT (holding plaque) and departmental superintendents are proud of Martha Mills' safety record.

"You will not find our safety record on posters, placards, or billboards in the mill. We think that having these statistics plastered on every wall could create a safety hazard by building up tension within the employees.

"Every day is Safety Day here. We handle safety on an individual basis like we handle other plant objectives such as production, quality, cost, and waste control."

Nobody Gets in a Rut on Safety

Like most other mills, Martha has a safety committee. The overseers and second hands meet once a month and report all unsafe practices, injuries, and recommendations. The department heads then get together and review all the reports. Plant inspections, meetings, and safety procedures are changed frequently so they will not become routine and be neglected.

Special efforts are made to prevent accidents and injuries in the mill. A study has been made of every machine to eliminate as many hazards as possible. Many of the machines have special guards and safety features in addition to original equipment.

The mill is particularly proud of the machine guard on a high-speed warper. As the result of an accident that permanently disabled a warper tender several years ago, the mill and machine manufacturer worked together to devise a guard to protect the operator. The guard swings up and out of the way when the machine is stopped. This guard is now standard equipment on this particular type of warper.

The machine guard on individual card drives was considered inadequate, and a supplementary guard has been added. A telescoping guard on twisters slides back out of the way for doffing but protects the operator when the machine is running.

Other mill-made safety devices include locks on combers, roving frames, and other machines. The lock on the comber is very simple. A hole is drilled in the starting rod and a metal key, suspended by a chain when not in use, is inserted in the hole. The comber cannot be started until the key is removed.

Nothing is too minor to receive attention. For example, the quiller thread guides become hot through friction, and several of the operators reported burned and blistered fingers. A nonconducting fibre shield was designed and installed that permits threading the guides without touching the metal part.

Attention to detail is again illustrated by stenciled notices on wall switches, "Pull handle with left hand only." Operating the switch with the left hand makes it impossible to stand in front of the switch, and thus injury resulting from a shortage or blown fuse is minimized.

Mirrors Are Used at Runway

Neat metal warning signs are posted at dangerous intersections and at doors, ramps, elevators, and stairs throughout the mill. In the spinning department, two mirrors mounted at the intersection of three aisles and a runway show the reflection of any one approaching around the corner.

Martha Mills attributes its good safety record to the unceasing vigilance of its supervisors and the cooperation of its employees. No attempt is made at mass training or accident prevention. No special drives or promotions are made. Safety is accepted as a part of the daily routine, and that everybody works at it is proved by the long unbroken string of accident-free days at the mill.

To Sum Up The Safety Lesson—

This study of the five plants that won first-place awards in the safety contest shows that:

- Cuts and strains are the most prevalent accidents in the mills.
- Falls are the cause of some of the most serious injuries.
- Machines and materials-handling equipment cause some accidents.
- All the mills require written reports of all injuries. Some of the mills follow up the reports with a fuller investigation.
- All injuries requiring medical attention are investigated by some member of supervision.
- All the mills have safety inspections. In frequency of inspection, who does it, and how it is done, there is much variation from mill to mill.
- Safety committees and meetings are similar in most mills, but they vary in membership and in some operational details in the various mills. It is generally agreed that best results are obtained by including some workers in both the inspection committees and in the investigations of accidents.
- Most of the mills concentrate on eliminating plant hazards by the use of adequate machine guards. Generally, they have not been content with the standard guards supplied with the machines but have added to or improved them.
- Other physical aids to safety practiced by the mills are nonskid surfaces for ramps and stairs; mechanical handling of materials; safety locks on machines; and proper maintenance of floors, tools, and machines.
- Only one of the mills employs a full-time nurse, but all have first-aid facilities and provide medical care for the more serious injuries. In most plants, the injured person is free to choose his own doctor.
- All the mills have some form of recognition for safe workers. The rewards range from citations to bonuses.
- All the mills try to put their safety programs on an individual basis. The worker is taught that safety is for his benefit, not just something to help make more profits or save money for the mill.
- Supervisors assume their share of responsibility by teaching safe work habits, by eliminating safety hazards, and by the use of discipline when rules are broken.

TOP ROLLS are checked on the roll analyzer for run-out and taper. Run-out averages 0.001 in.

BOTTOM ROLLS are tested with a dial indicator. About 256 roll bosses are checked in 10 mins.

How Rex Maintains ROVING and SPINNING Frames

• Roving and spinning frames are overhauled every four months at Rex Mills, Inc., Ranlo, N. C. A top-roll analyzer makes it easy to keep the roll run-out within 0.003-in. tolerance, and most of the time run-out averages 0.001 in.

ROVING AND SPINNING FRAMES ARE DISMANTLED, cleaned, and overhauled every four months at Rex Mills, Ranlo, N. C.

During the overhauling operation, special attention is given to roll checking and buffing. A tolerance of 0.003 in. is permitted for top rolls on both spinning and roving frames, but most rolls stay within 0.001 in.

Top rolls are checked with a roll analyzer and changed or buffed as required. Rex uses a tester that checks taper, run-out, and diameter of all the rolls on a 256-spindle spinning frame in 20 to 30 mins.

Top rolls formerly were buffed twice a year, whether they needed it or not. Use of the analyzer shows that many rolls do not have to be buffed every six months. The good rolls are put back on the frames, and maintenance costs are reduced proportionately.

Another advantage of the analyzer, according to Rex officials, is that you can quickly tell if your buffing machine is working properly. The analyzer is more accurate than the old method of laying a straight edge across the cot and looking for light between the cot and the straight edge.

While the laboratory technician is checking the roll run-out, the overhauler inspects and repairs or replaces aprons, cap bars, stands, saddles, gears, spindles, and other parts of the frame that may need attention.

Bottom rolls are checked with a dial indicator every time the rolls are scoured. About 256 roll bosses are inspected every 10 mins. by the laboratory technician.

Rex is a clean mill, and it stays that way by seeing that cleaning schedules are properly carried out. Manual cleaning in the spinning room is supplemented by Parks-Cramer overhead cleaners and Pneumafil.

The cleaning schedule calls for wiping off rockers, head ends, traverse rods, rails, and spindle bases every shift. Top rolls are cleaned every 24 hrs., stands and back steel rolls once a week, and rings once each doff.

Guides and wires are brushed after each doff; guides are run out three times per shift. Once a week, top and bottom roving is wiped off and bottom steel rolls are cleaned.

Lubrication of spinning frames presents only a minor problem at Rex. Top rolls on spinning frames have grease-sealed bearings that require little or no lubrication, and cylinders are equipped with ball bearings.

Head-end bearings are oiled every shift, and bottom rolls are oiled twice a week. Cylinder bearings are greased twice a year.

How REDUCED FLAT SPEED Affects Cotton Carding

Carding tests made recently in Hungary by the Technical University show that flat speed has a linear relation to the weight of card strips. Other tests show the effect of reduced flat speed on—

- **Loading of the flats**
- **Neps in the web**
- **Mean length of the fiber**
- **Trash in the strips and web**

By G. MERENYI, Dept. of Textile Technology, Technical University, Budapest, Hungary

EXPERIMENTS TO DETERMINE THE EFFECT OF FLAT SPEEDS on various phases of cotton carding were recently made by the Technical University, Budapest, Hungary. The project covered the effect of reduced flat speeds on:

1. The weight of card strips
2. Loading of the flat wires
3. Nep content of the web
4. Fiber breakage
5. Trash content of the strips and web

Before going into the study of flat speeds, the researchers decided to look into the effect of front plate to cylinder settings on the weight of strips produced.

This action was taken because of earlier experiments by R. C. Cheng and W. E. Morton [*Journal of the Textile Institute*, Aug., '51, p. 442], which indicated that extremely close settings could reduce the weight of strips 50% over normal settings.

Plate Setting Has Little Effect

For this preliminary test, a 1909 Brooks-Doxey card and a 1948 Textina card were selected. Stock was first processed through the cards with normal working settings of 0.91 mm. for the old card and 0.86 mm. for the new card.

Then the plate was closed up to 0.56 mm. on the old card and 0.45 mm. on the new card—the closest setting possible without touching the cylinder wire.

The closer setting on the old card reduced strip weight per flat from 770 mg. to 750 mg., a negligible amount. The closer setting on the new card reduced strip weight from 1,500 to 1,300 mg., or about 13% instead of the expected 50%.

Conclusions were that (1) front plate to cylinder setting has little effect on the weight of strips produced, and (2) it is not practical to try to control the weight of the strips by varying this setting.

After completion of this test, the major project—the effect of reduced flat speeds on carding—was launched.

The metric system of measurement is used to describe the results of the tests reported on these pages. Since the results are largely relative, the metric measurements were not converted to the English system. A rough conversion can be made, however, by using the factor 25.4 (mm. per in.)—EDITOR

Tests Were Inspired by N. C. State Research on High-Speed Carding

"These tests were inspired by the work done on carding by J. F. Bogdan and Y. T. Feng of North Carolina State College," says Professor Merenyi, the author.

"The report on accelerated lickerin speed [TEXTILE WORLD, May, '52, p. 91] created a sensation in Hungary. A similar series of tests, conducted under the direction of the Technical University, fully confirmed the results and observations of the N. C. State researchers."

Cottons used in the test were 29- to 31-mm. Iranian, 28- to 29-mm. Ashmouni, and several 29- to 31-mm. cottons grown in the Soviet Union. Grade and fiber strength varied considerably.

The card used for most of the tests was a 1907 Brooks-Doxey machine. Speeds and settings, as shown in the accompanying table, were left unchanged except that a lickerin speed of 747 rpm. was used instead of the normal 430 rpm. The purpose of the high lickerin speed was to open the stock thoroughly so that the correlation between flat speeds and various carding functions could be studied more easily.

The speed of the belt drive to the flats was varied to permit flat speeds of 25.5, 28.5, 31.5, 37.5, 42.7, 48.2, 50, and 51 mm. per min.

Test 1—The Linear Relation of Flat Speed to Strip Weight

The first series of tests were conducted to show the correlation between strips weight and flat speed. These tests were made under normal working conditions. The cylinder and the doffer were cleaned on the mill schedule with ordinary rope-drive strippers and bent-wire card clothing.

Strips were weighed regularly during the interval between strippings of the cylinder; and strips weighings were repeated five times for each flat speed.

The weights of the strips were plotted against the various flat speeds, and it was found that the strips could be

Card Speeds and Settings Used for the Tests

Card	Brooks-Doxey (1907)
Width (mm.)	1,140 (45 ins.)
Cylinder dia. (mm.)	1,270 (50 ins.)
Doffer dia. (mm.)	686 (27 ins.)
Lickerin dia. (mm.)	228 (9 ins.)
Flats (total number)	105
Cylinder clothing	No. 100 (flexible)
Doffer clothing	No. 110 (flexible)
Speeds (rpm.)	
Cylinder	163
Doffer	9
Lickerin	747
Flats (mm. per min.)	25.5 to 51 (1 to 2 ins.)
Settings (mm.)	
Feed to lickerin	0.18 (0.007 in.)
Screen to lickerin	
Front	1.0 (0.40 in.)
Back	1.4 (0.55 in.)
Cylinder to lickerin	0.18 (0.007 in.)
Flats to cylinder	
Back	0.30 (0.012 ins.)
Intermediate	0.25 (0.010 ins.)
Front	0.18 (0.007 ins.)
Screen to cylinder	
Front	3.0 (0.120 in.)
Back	1.5 (0.060 in.)
Front plate to cylinder	0.56 (0.022 in.)
Doffer to cylinder	0.127 (0.005 in.)
Doffer to comb	0.55 (0.022 in.)

SPEEDS AND SETTINGS are the same as used for mill production except that the lickerin speed was increased from 430 rpm. to 747 rpm.

controlled linearly within ±5 grams.

The tests confirmed the theory that specific loading of the wires is independent of flat speed. Instead, loading is proportionate to the length of the interval between strippings.

If flat speed is constant, weight of the strips increases per unit time as the interval increases. This fact means that the control line must be based on equal stripping intervals.

The reason is that at the initial stage of the loading of the cylinder, the weight of the strips first decreases and then increases gradually so that the average weight per unit time increases with the longer intervals between stripping.

It should be pointed out, however, that this condition does not hold for cards equipped with continuous strippers or metallic clothing, where loading of the cylinder is practically zero.

Test 2—The Relation of Flat Speed to Variation in Wire Loading

The effect of flat speed on the variation in loading of the flat wires was studied next. This test was carried out by making 20 weighings of strips produced at 25.5 and 51 mm. per min.

Tests made on flats running at both high and low speeds showed:

1. Loading of the first 40 flats decreased immediately after the cylinder was stripped. Least loading was between the 30th and 40th flat. The reason for this action is that the fiber absorption of the cylinder is greatest immediately after stripping.
2. Loading from the 40th to the 160th flat was comparatively fast through the 80th flat, and then it leveled off.
3. The degree of loading depends on the length of time the flat remains in the carding zone, and there is no consistent relation between flat speed and loading.
4. Variation of strip weight was 200 to 360 mg. per 10 flats at the lower speed and 190 to 360 mg. per 10 flats at the higher speed. This variation occurred regularly and had no effect on the average weight of the strips.

Test 3—Effect of Flat Speed on Nep Production in the Web

The next test showed that more neps are produced at slow flat speeds. Comparative tests were run on experimental cards with high lickerin speeds and on mill cards operating at normal lickerin speeds.

Flat speeds on the experimental cards were 25.5 and 51 mm. per min.; the mill cards had a flat speed of 51 mm. per min.

The experimental cards produced fewer neps than the mill cards, even at the lower flat speed. This fact is credited to the higher lickerin speed of the experimental cards.

The experimental card with the lower flat speed, however, produced about 25% more neps than the card with the higher flat speed. Also, the web was poorer on the card with the low-speed flats.

Test 4—The Effect of Flat Speed on The Mean Length of Fibers

The next problem studied was the effect of low flat speeds on the mean length of fiber.

Five samples of 25 grams each were taken from various parts of the lap, the sliver, and the strips. Samples were removed at intervals of 10 mins.; speeds ranged from 25.5 to 51 mm. per min.

Fibers were measured, and it was found that the mean length gradually decreased between the higher and lower speeds.

At the higher speed, the average difference between the length of the fibers in the lap and in the sliver was 0.85 mm. At the lower speed, the difference was 1.10 mm. The 0.25-mm. difference is not considered significant.

The explanation for this difference in fiber length is that the low-speed flats stay longer in the carding zone and the fibers become fatigued. Many of the fibers are transferred again to the cylinder, which further weakens them.

Further examination showed that the fiber in the flat strips followed the pattern of the fiber in the sliver.

Test 5—The Effect of Flat Speed on Trash Content of the Strips

A final test was made to determine the effect of flat speeds on the trash content of the strips and the web.

A Shirley analyzer was allowed to run idle for awhile; and then a 25-gram sample from a test strip was fed into it. The card was stripped a second time, and a second 25-gram sample was analyzed. Trash content of the two samples was added together.

This procedure was repeated a number of times on eight different cottons.

Results showed that 21% more trash was found in the

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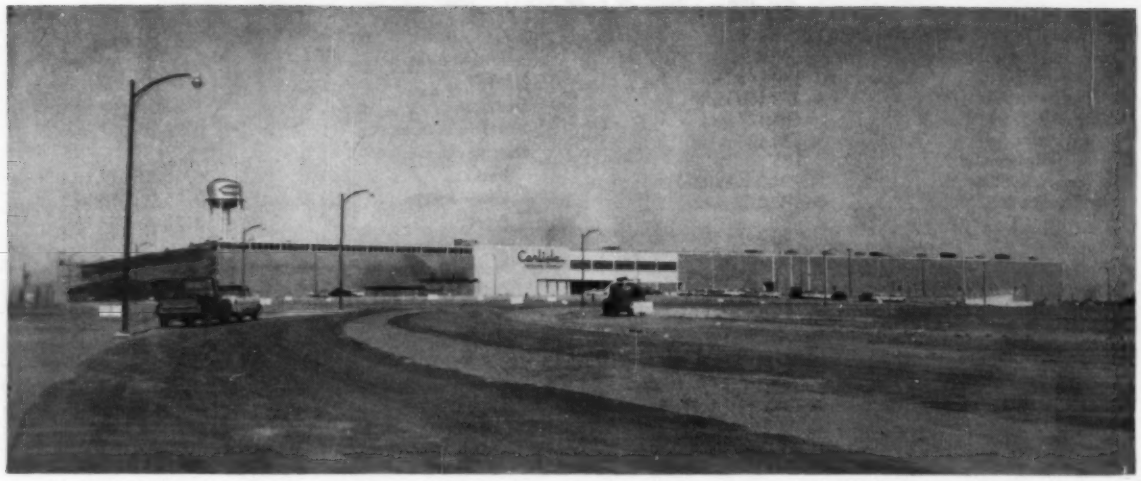

CARLISLE FINISHING CO., Cone's newest plant, provides 13 acres of working space for finishing cotton fabrics. Basic production machines are 10 printing machines and two continuous dyeing ranges.

Here Is Cone's New Carlisle FINISHING PLANT

This new finishing plant of Cone Mills Corp. at Carlisle, S. C., is moving rapidly into its full production potential of 100-million yds. of cloth per year. Following current trends, the plant has—

- **All major operations on one floor**
- **A U-shaped processing layout**
- **Continuous bleaching and dyeing ranges**
- **A pleasant working atmosphere**

ONE OF THE FINEST FINISHING PLANTS OF ITS TYPE in the country is rapidly getting into full production at Carlisle, S. C. Cone Mills' expanding operations justified investing over $10-million in a completely modern printing and dyeing plant that provides over 13 acres of working area.

FINISHING RANGE includes a pad, predryer, 90-ft. tenter, and curing unit. There are two ranges of this type and one with a stack of 60 cans instead of the predryer.

The main building is 400x800 ft., with a large napper room at one side. There is a completely finished basement at the plant except under the print-machine area and the warehouse. This lower floor is used for maintenance shops, an employees' lounge, and auxiliary equipment.

On a mezzanine floor is the plant laboratory and mixing equipment for finishes. Two Votators on this floor prepare starch pastes for printing, and there is provision for mixing complete print color pastes for the printing machines below.

The laboratory and office areas are air conditioned; the plant area has an extensive air-exchange system.

The plant was engineered by J. E. Sirrine Co. and built by Daniel Construction Co. The first steel was erected in June, 1956, and the plant began operation in Jan. 1957. Rapid completion of details had brought the

NAPPED GOODS are an important part of Cone's production at Carlisle. The department is operating 10 Woonsocket nappers at present and has room for 30 more.

WAREHOUSING SPACE is unusually high and provides 30 ft. of working space. An elevator system operating from a monorail insures safe handling of cases to and from the upper tiers.

plant into full running condition by May, 1957.

Big Steel Means Big Bays

Construction is of utility brick over a steel skeleton. Bays in the working area are 60x20 ft., made possible by supporting the roof on 27-in. I-beams that rest on 12x12-in. H-columns. Over 3,500 tons of steel went into the structural elements. The walls are 8 ins. thick, finished on the inside to a height of 9 ft. with green glazed tile.

Floors are of 8-in. reinforced concrete that will carry 300 lbs. per sq. ft. in the suspended areas. A special hardening finish was applied to give a smooth, durable surface.

Roof construction is of 2½x8-ft. precast-concrete slabs, topped by 2-in. Foamglas insulation, and sealed with a four-ply tar-paper built-up roof, with a final coating of gravel.

Warehouse and main working areas have 30 ft. of head room, which simplifies machine installation and helps considerably to carry off excess heat. The warehouse is equipped with a monorail system to aid in loading and unloading the bins that are used for raw- and finished-goods storage.

The lighting system consists of 8-ft. units carrying two high-output fluorescent tubes each. Mounted 28 ft. from the floor, the fixtures give very even illumination at the working level.

Heating and ventilating the huge plant has been carefully worked out. Heating units with automatic controls are mounted on the roof and deliver heated air through ducts to working areas below as needed.

To remove processing heat and fumes, a large number of propeller-type fans are located in the ceiling. Over 1-million cu. ft. of air per minute is handled by this battery of exhaust fans. The fans are made of aluminum or stainless steel, depending on the area they serve.

Boilers Are Efficient

The plant's boiler house is a separate structure that houses three 75,000-lb.-per-hr. Babcock & Wilcox coal-burning boilers and auxiliary equipment.

The boilers are fed a mixture of nut and slack coal by a Detroit RotoStoker. With this unit, fines are burnt in mid air as they leave the stoker and the heavier pieces are distributed over the grate surface. Fines are recirculated before being sent as fly ash to the stack.

The boilers are evaporating 11.3 lbs. of water per pound of coal for an efficiency of 83%.

Ashes are divided into fly ash and clinkers from the grates. Both types of ash are dumped into an ash-removal system that uses water to flush the ashes out to a receiving area near the river bank.

Coal is supplied to the stokers through 100-ton bunkers fed from a silo that is in turn filled directly from the coal cars by a conveyor. As the hoppers at the boiler demand coal, the bunkers deliver weighed quantities of coal to a nonsegregating distributor connected with the hoppers. Coal consumption is recorded by the weighing mechanism.

Feed-water pumps are turbine driven, and exhaust from the turbines goes to an insulated hot-water tank.

A continuous blow-down system on the boilers includes a heat exchanger that picks up heat from the waste water and transfers it to the hot-water system.

Automatic control of all possible functions keeps labor cost at the steam-generating plant at a minimum.

Because pure water is vital to a dyeing and finishing plant, Cone has spared no expense in setting up a complete plant for clarifying, filtering, and chemical modification of water from the Broad River. Preliminary treatment of the raw water includes adding automatically regulated amounts of soda ash, alum, and chlorine at a central receiving well. The water is pumped to a 500,000-gal. clarifier, where a good portion of the silt is removed.

From the clarifier, the water goes through sand filters with a combined capacity of 4-million gals. per day.

After filtering, the water is stored in a 1-million-gal. tank that acts as a working reservoir for the plant's needs. Constant checks on clarity, hardness, and residual chlorine are kept by a chemist trained in water-purification work. Control of all elements in the plant is so well set up that one man handles the operation.

Waste Water Is No Problem

Carlisle's effluent-disposal system is based on a retaining pond that will hold up to 100-million gals. of waste, at least four working weeks' leeway at top plant capacity.

Coupled with this slack is the fact that the minimum flow of the Broad River is 60-million gals. per day; so by a little managing and taking advantage of frequent heavy rains, the plant's waste can be discharged with little or no effect on the river.

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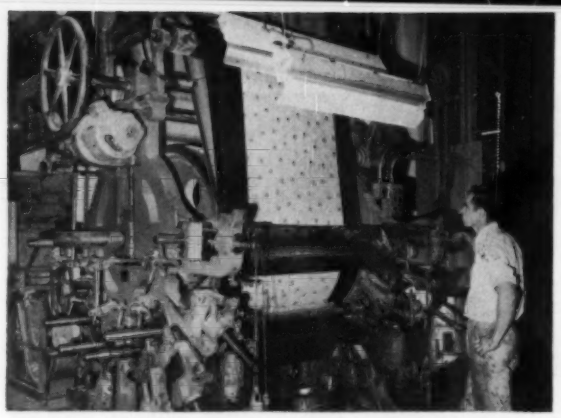
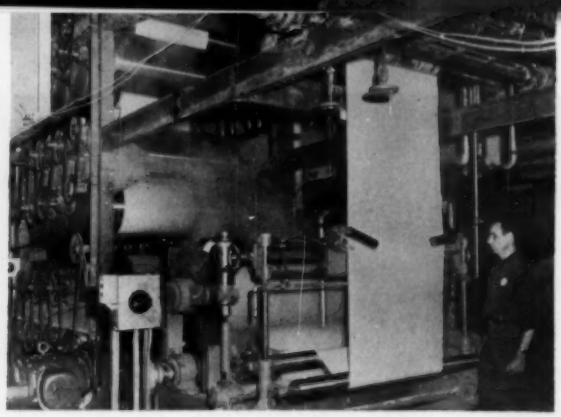


PRINTING MACHINES are driven by a multimotor system that synchronizes the printing machine, cans, and washer.



PRIMARY DRYER consists of pad, 60 cans, and a 90-ft. tenter. Cans are belt driven and operate at 40 to 50 lbs. of pressure.

Goods Move in U-Pattern

With warehousing facilities concentrated at one end of the plant, gray goods are started through the plant from the receiving area in the warehouse. Then they proceed through the bleaching, drying, napping, dyeing, printing, and finishing operations. The various steps are laid out so that the fabric ends up at the shipping area of the warehouse.

Preparation Is Continuous

A two-strand singer-desizing unit gets the goods ready for the Becco-system bleaching range. A rope washer removes sizing material and feeds the fabric to a saturator that soaks the goods in a caustic solution. A J-box stores the causticized fabric at 212° F. for 45 to 60 mins.; then it is led into another rope washer.

Following the wash, the goods are soaked in a peroxide solution and pulled into a second J-box kept at 212° F. for the actual bleaching. Two rope washings follow the peroxide treatment, and the goods are pulled from the washers to masonry bins for storage. Automatic pilers distribute the goods evenly in the bins.

From the bins, the goods are pulled to drying ranges or the mercerizing range.

Two combination can-and-tenter ranges are used for primary drying. There are 60 stainless-steel high-pressure cans in each stack, which is preceded by a heavy Microset pad and followed by a 90-ft. tenter. The heating system for the tenters utilizes six 30-hp. motors to drive six fans in three housings mounted over the tenters. The ranges are geared to run at up to 200 yds. per min.

The plant has eight 8-color printing machines that will handle 50-in. goods, one 10-color machine for 50-in. goods, and one 10-color machine for 60-in. goods. All are driven by a multimotor drive that includes a motor for the printing machine, one for the drying cans, and a motor for the blanket washer. All operate synchronously from a central panel.

Two agers handle the production of the printing machines.

The two soaping ranges carry gas-fired curing units ahead of the first pad to cure pigment-resin combinations that are frequently used in printing. Getting both jobs done in one run cuts handling and labor cost. Two more soapers will be installed soon.

There is one continuous dyeing range in operation at present, and another is scheduled for erection in the near future.

There are three finishing ranges now in place at the plant. Two have roller-type predryers, and one has a stack of 60 cans preceding the tenter. Forty of these cans are Teflon-coated to reduce pick-off of finishing material.

Finishing pads are equipped with constant-level controls that maintain any wanted level of finishing material. Two rubber-belt compressive-shrinkage machines produce fabrics with shrinkage of 1% or less.

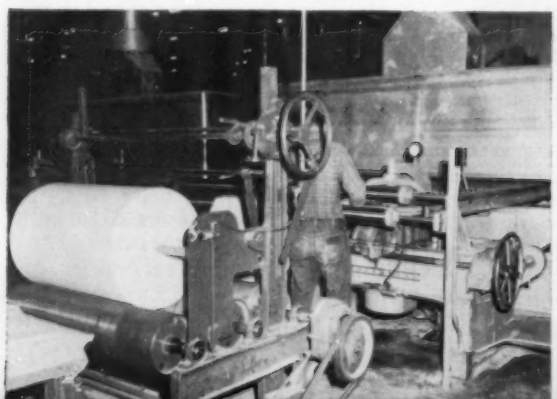
The plant has a large napper room now operating 10 two-strand Woonsocket nappers. A Gessner napper and a number of other Woonsocket nappers are being set up. The department is laid out to carry 40 napping machines.

Finished goods are hooked off on 12 hookers, inspected, shaded, invoiced, and packed in an area close to the shipping end of the warehouse.

Auxiliary departments include the laboratory, an engraving shop, a well-equipped and well-staffed first-aid department, and an employees' lounge. Vending machines dispense hot and cold foods.

Carlisle's management has spared no expense to make the plant a desirable place to work. The splendid physical facilities of a well-planned building are coupled with a personnel-relations program that concerns itself with keeping people happy.

PAPER CORES used for batching up dried fabric eliminate the need for the usual large stock of expensive wooden shells.



FIRST-AID DEPARTMENT is staffed by a registered nurse 24 hrs. per day. Here a prospective employee is being given an eye test.

Today's Way To Plan A MATERIALS-HANDLING System

• The successful modern materials-handling system is the result of good planning and organizing. To set up such a system, you need a trained materials-handling engineer to work with plant department heads. Here's the way to develop new handling ideas and put them in operation.

THERE ARE OVER 300 DIFFERENT DEVICES for materials handling on the market today. Fork trucks, containers, pallets, and conveyors are only a few of the devices from different classes of equipment that are used in the solution of materials-handling problems.

But materials handling is not equipment; it is methods improvement of the largest single activity in industry today. Materials handling accounts for as high as 50% of your manufacturing cost; the national average is approximately 30% of manufacturing cost.

A large percentage of materials-handling systems installed today have been pieced together and were started primarily with the purchase of equipment. The major portions of the systems were installed without evaluation; and the equipment was purchased without regard to size of loads, frequency of movement, building facilities, and floor loads.

As a result, the systems don't: (1) operate at optimum capacity, (2) lower human effort, and (3) lower operating cost.

A Trained Engineer Is Needed

For most efficient operation of its materials-handling system, each plant needs a trained materials-handling engineer with the following qualifications:

1. He should have an industrial-engineering background with practical experience in methods work.

2. He should have a general knowledge of shipping and receiving, package engineering, layout, manufacturing processes, cost, and the various types of devices used in materials handling.

With this knowledge, the materials-handling engineer can coordinate all phases of the system for a complete analysis of the proposed system. Therefore he can eliminate purchasing equipment that will not do the job and can avoid installing systems that are not practical for the operation.

Based on a paper presented by Ronald H. Robison, materials-handling and packaging engineer, Talon, Inc., at the Seventh National Materials-Handling Exposition & Conference.

The Engineer Lowers Cost

The engineer is concerned with the scientific control and management of men and machines to minimize total production cost and total human effort in the complete manufacture and distribution of his product.

In all industries, three basic functions are performed: (1) processing, (2) assembly, and (3) materials handling.

Materials handling is a system of methods and equipment to tie all productive and nonproductive units together into one large production unit. With this type of system, all departments of a plant are tied together into one large operating machine.

Materials-handling progress is directly related to the adoption of the latest and best methods in any modernization program. Excellent records of materials-handling economies have been made by revamping the older buildings in use and by installing improved methods and the latest materials-handling equipment.

The System Must Be Studied

The work of the engineer includes studies of materials-handling methods, packaging designs, layouts, movement of materials, and handling equipment. He should work closely with plant personnel to coordinate all the various ideas of each individual in an efficient system.

The modernization of materials-handling operations is one of the most important factors in basic materials handling and if not properly emphasized, can result in the failure of a system.

The materials-handling cycle covers all movements of materials or products from: (1) the method of packaging of your raw products at your receiving departments, (2) receiving-department operations, (3) storage areas, (4) in-process operations, and (5) packing and shipping to your customer or storage in your own warehouse.

This entire cycle should be under the supervision of your materials-handling engineer. He should work closely with all department heads for the coordination of ideas so that no phase of the entire cycle is overlooked. With this system of operation, cost reduction will follow.

Production Men Can Help

An effective materials-handling system requires a lot of original thinking. Department heads and supervisors should be encouraged to present their ideas. Planning and methods departments should be consulted for their ideas. By combining the thoughts of all these employees, you will build an efficient system.

Your best selling tool for the system is the interest of the individuals who will use the system. If they have a part in planning the proposed system, they will do their best to make the system work. The finest system will fail unless constant interest and planning are present.

Analyze the Possible Savings

Present your proposed system to your industrial-engineering department for an analysis to determine the savings involved. With this approach, there is less chance of failure.

Standardization of containers, packaging supplies, and materials-handling equipment is a source of savings. If you have more than one plant manufacturing the same product, you can purchase materials and equipment in large quantities at discounts and transfer them from plant to plant.

Set up standards on all your materials-handling equipment so that there will be no error in purchasing new equipment. Then you will have standard equipment that can be transferred from system to system or from one facility to another.

An effective standardization program will result if all materials-han-

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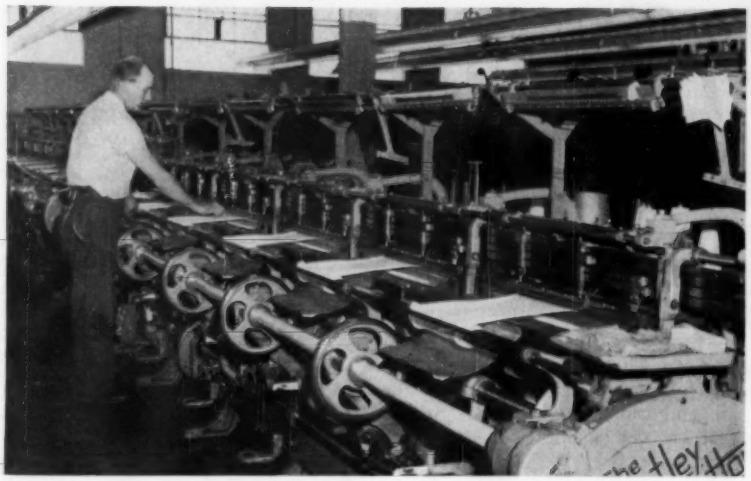
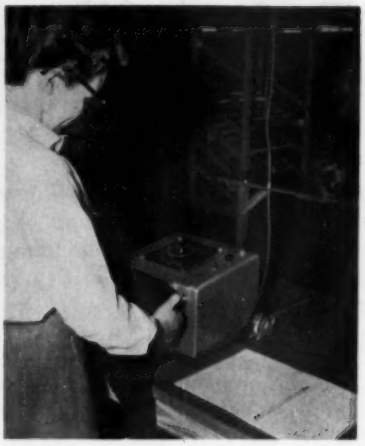


SWEATERS are knitted on Bearing machines and 12-section Bentley machines controlled from a central position.



STITCHES are counted automatically on the Marvel-Meter instrument. Sweaters are checked every day.

CASHMERE SWEATERS
Get Lots of Attention —

—at the new plant of Hadley Corp., Weaverville, N. C. All sweaters are full-fashioned, and quality-control methods practiced include—

- **Inspection of sweater parts over a lighted frame**
- **Automatic counting of stitches**
- **Handling of sweaters in plastic bags**

CASHMERE SWEATERS HAVE THEIR BEGINNING in the high mountains of Southeast Asia. Many of these sweaters are completed in the mountains of North Carolina where Hadley Corp., a division of Cashmere Corp. of America, recently built a new plant.

Because the materials used in these sweaters are extremely costly, rigid quality-control methods are practiced. Much of the work on the sweaters is done by hand, inspection follows many processes, and special materials-handling equipment is used.

The plant, which covers 52,000 sq. ft. of floor space, is a one-story all-brick structure. Work flow is laid out so that yarn enters at the south side of the plant and the finished goods emerge at the north end.

Yarn is spun and dyed at the Cashmere Corp. plant in Cleveland, Ohio. Yarns are all mothproofed and are tested for size before they leave the plant.

To compensate for color variations to get a true weight for all sweaters, the yarn size is varied slightly. The yarn cones are packaged in polyethylene bags to preserve the moisture content and to keep the yarn free from dirt and damage.

The yarn is kept stored in racks until required. A running inventory is kept with the aid of a Kardex system.

The knitting room is not air conditioned because the plant is 2,200 ft. above sea level and has a high ceiling. Knitting is done on Bentley and Bearing machines. Most machines are 21-gauge, but there are a few 24-gauge machines running.

The Bentley knitting machines have 12 30½-in.-wide sections that are controlled from the center of the machine. A double row of lights over the needle bars gives ample illumination for the knitter to see faults.

How Stitches Are Counted

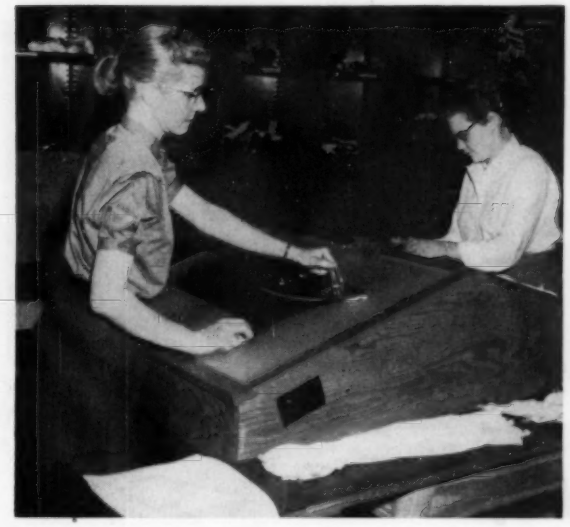
Sweater bodies and sleeves made on these machines are checked each day on the Marvel-Meter stitch counter. This instrument automatically counts the stitches while the fabric is stretched over a pair of rollers. Each section is kept knitting the same-size garments with this system.

Every piece of fabric made for sleeves and bodies is examined over an inclined frame immediately after they are knitted. The frame has an opaque-glass top, which has a light under it. A glass iron is used to smooth the fabric to check the edges because the edges curl.

If the part is found to be faulty, it is remade or mended. Examiners mark the fault with a fugitive tint.

Most rib trims are knitted on Dubied and Queens 10- and 12-gauge V-bed machines, although a Kiddier 12-section machine with 14-in. needle bars is used to make some cuffs. This machine is a spring-needle machine, and each piece of fabric is separated with a welt and draw thread. Pink cotton yarn is used for separating the trims because it contrasts with most colors.

Many sweaters are now made in



ALL PARTS of sweaters are inspected on a lighted frame after knitting. The glass iron aids the inspections.

TRIMMINGS for dressmaker styles are knitted on hand machines. Instructions are in front of the knitter.

dressmaker styles, and some parts of these sweaters are made on hand machines because they cannot be made automatically. These trims are made on Dubied 12- and 14-cut machines.

Knitting instructions for the parts are posted on a board in front of the machine. A counter on the machine helps the operator check the courses closely.

Sweater parts that curl are steamed to remove the curl so the parts can be handled easily. Wooden blocks hold down the edges of the fabric while the parts are steamed.

Pieces of fabric are assembled to be made into 1 doz. sweaters and placed in polyethylene bags. The sweaters travel through the plant in these bags, and they are removed only when they are worked on.

Goods Handled in Fibre Boxes

The bags are moved from one operation to the next in fibre boxes, which are also used to hold the work while the garments are being processed. Production is planned so that inventory is kept low, and the goods between processes are few.

Sotco steady-dial 16-point Model-P loopers on individual stands are used to loop the neck and shoulders. Sleeves on all sweaters are also looped. Sides and undersleeves are joined on Singer cup seamers.

Sweaters are handled inside out, but they are turned to the correct side before they are pressed. All sweaters are washed in rotary washers, and then hydroextracted and tumble dried. An inspection for broken threads is made at this stage.

After drying, each sweater is drawn on a metal form to set the sweater to the correct shape. A final pressing is then made to give the sweater a neat, smooth appearance.

Cardigans are processed in a separate section where the fronts and necks are marked with a template and cut out with scissors. Dressmaker styles are made up in another section where many operations are performed by hand and buttons are attached.

The final inspection includes a spot

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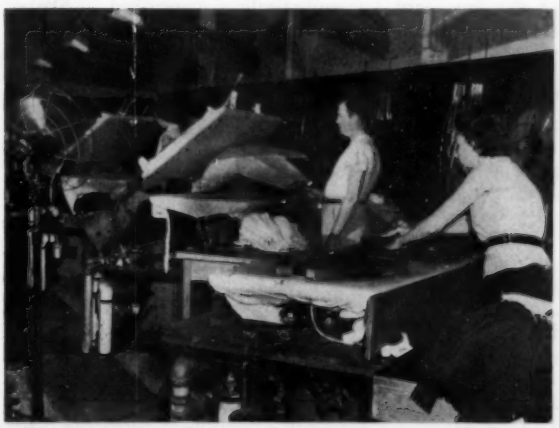
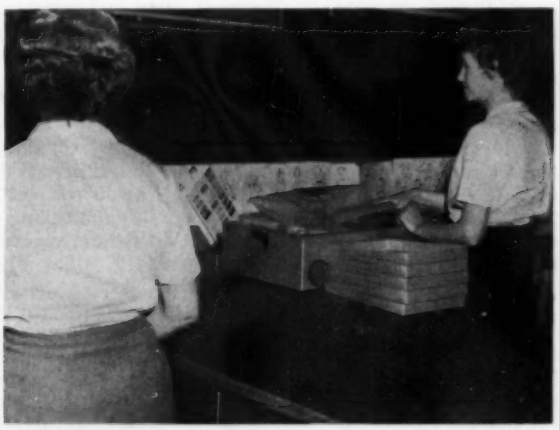
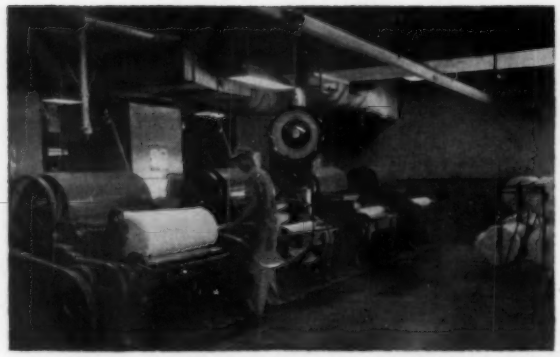


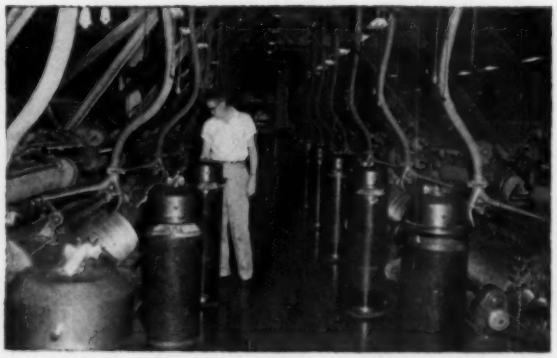
STEAMING OPERATIONS include steaming the parts for better handling, setting for the correct size, and a final pressing.



PACKAGING of Hadley sweaters is done with this machine that blows the mouth of the polyethylene bag open.



LAP is doffed, weighed, and conveyed to the card room with a minimum of labor.



CARDS producing stock-dyed sliver are equipped with vacuum stripping.

Good Housekeeping Helps Produce QUALITY DENIM

A complete denim-producing plant with an output of almost ½-million yards per week stresses cleanliness at every process. Maintaining a clean mill pays off in—

- **High production**
- **Good quality**
- **Better workers**

ALTHOUGH IT IS LOCATED FAR FROM OTHER TEXTILE PLANTS, a mill in the deep South has become a model unit through a continuing program of modernization.

One of the most noticeable things about this fully integrated denim mill is the clean and orderly condition of buildings, machines, and materials. Cleanliness is stressed at every point of manufacture from the opening room through shipping. The mill management believes that a clean and orderly work place helps maintain employee morale, improves the quality of materials, and adds to the efficiency of the machinery.

Both stock-dyeing and yarn-dyeing are done, but yarns requiring vat-dyeing are shipped by truck to another plant for this operation. Plans are complete for an addition to the dyehouse for vat-dyeing facilities.

Warp and Filling Opening Used

Cotton, much of it locally grown, is opened in the cotton warehouse. It is carried through pipes across the mill to the picker room and into the cleaners. Two lines are maintained; one for warp stock, the other for filling.

For the regular blue denim, fibers to be used for filling are stock-dyed. For gray-back denim, the filling is used in the natural gray state with a blue warp.

The four Saco-Lowell pickers used for warp stock are the two-beater type, and the two filling-stock pickers have three beaters each. The lap scales are mounted on an overhead monorail at the front of the pickers to make doffing and weighing of the laps easy. The 15¼-oz.-per-sq.-yd. laps weigh 56½ lbs.

Cards Have Overhead Cleaners

The 198 Saco-Lowell cards have vacuum stripping and are equipped with overhead ceiling cleaners. Here, as in all parts of the mill, the floor, walls, and ceiling are kept clean. The floors are sanded, sealed, and varnished. The painted walls, ceiling, and supporting posts show the result of regular, systematic cleaning.

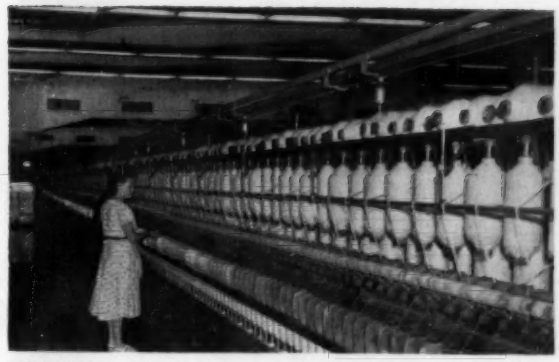
The spinning room of 22,992 spindles is also a model of cleanliness. The H&B spinning frames are equipped with separators, revolving clearers, and traveling overhead cleaners. The warp yarn goes from spinning to Barber-Colman spoolers. A continuous flow of yarn for the spoolers is provided by means of a chute, gravity-fed from the floor above.

After the warp yarn is dyed, it is beamed and carried to the slasher room. There are three slashers of three cylinders each. The slashers have Westinghouse multimotor drives and Barber-Colman moisture controls. The squeeze rolls in the single size boxes are yarn-wound, and pressure is pneumatically controlled. Slasher speed is 38 yds. per min. The size pickup is 8%, and stretch is about 1¼%.

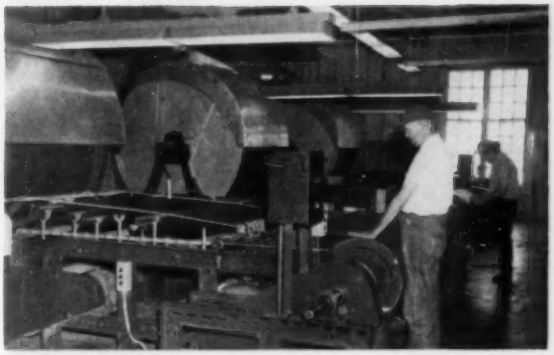
In addition to the seven-beam creels for the regular warp yarn, special creels are used for the selvage yarn. The selvages are of undyed yarn and are not put on section beams with the regular warp but are run from spools, through the slasher, and onto the warp-yarn beams.

Drag Rolls Control Warp Tension

Weaving is done on 701 E-model looms of 36- and 40-in. width. The looms are motor-driven at 165 ppm. The looms have the Roper let-off and use 24-in. beams, which the mill plans to replace with 26-in. beams in the near future.



SPINNING is H&B. The frames have separators and revolving clearers.



SLASHERS have three cylinders. Selvage yarns at each side are undyed.

Steel fillet is used on the rolls of the high-roll, worm-driven take-up motion. The looms have four-bank electric warp stop motions and single side filling forks. Midget filling feelers and Stafford thread cutters are used.

Some of the denim is drawn in three harnesses, and other styles use four harnesses. Draw-Tex harness is used. The looms are equipped with Brown spring tops; and drag rolls help control uniform yarn tension.

No wool or fur is used in the shuttles. Filling tension is controlled by two tufts of pig bristles. The shuttles take an 8¾-in. quill.

Cloth goes from weaving to the cloth room for shearing and inspecting and then to finishing. Close follow-up for quality control is maintained between inspecting and the weave room.

Curing Oven Installed

The denim is desized, given a resin finish, and preshrunk in the finishing process. Latest equipment is a gas-fired curing oven that finishes the denim at 40 yds. per min. Heat in the oven is automatically maintained within a 5° plus-or-minus range of 300° F. without any change in the speed of cloth delivery.

The cloth is taken directly from the compressive-shrinkage range to the floor above by a roller arrangement that eliminates handling and trucking. The finished cloth is inspected on frames and is also hand-graded on tables after it has been folded.

Shading is done after inspecting, and the cuts are again checked for color matching after they are stacked before baling. The cloth is then baled for shipment.

As a further check on quality, random cuts of cloth are spread on a 140-ft. table made like a cutter's table. The cloth is checked for color, quality, uniformity, and defects such as biased cloth or uneven selvages.

All major departments of the mill have central-station air-changing systems. A well-equipped machine shop, wood shop, and welding shop help keep buildings, machinery, and equipment in good condition.

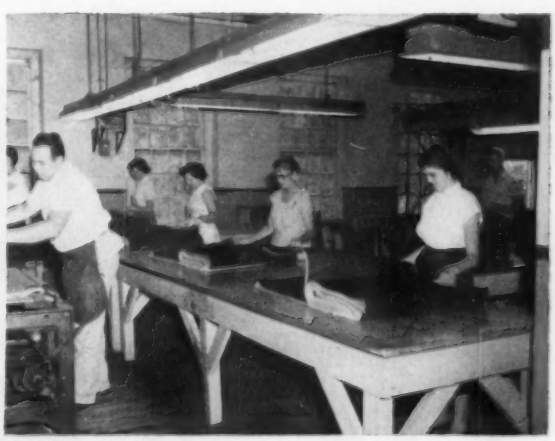
Raw materials and finished products are tested in the mill laboratory. Constant checks are made to maintain the high quality of the denim and to insure better-running materials.

Location Creates Problems

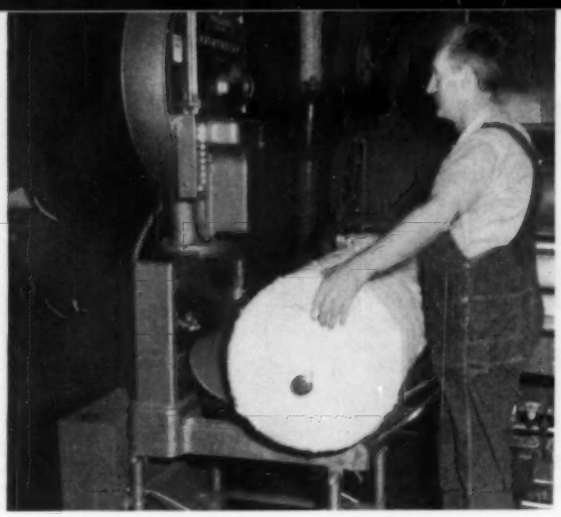
Being located some distance from the textile-manufacturing centers and machine suppliers, the mill has a problem of obtaining mill supplies and experienced workers. The first problem is handled by keeping a large inventory of parts in the supply room; the second has been overcome by training local workers.

That the policy of having a clean and orderly plant is paying off is reflected in the quality and quantity of production and the morale of the employees. Weaving efficiency is 94%, and total seconds of finished denim is less than 12%. The percentage of labor turnover is very low.

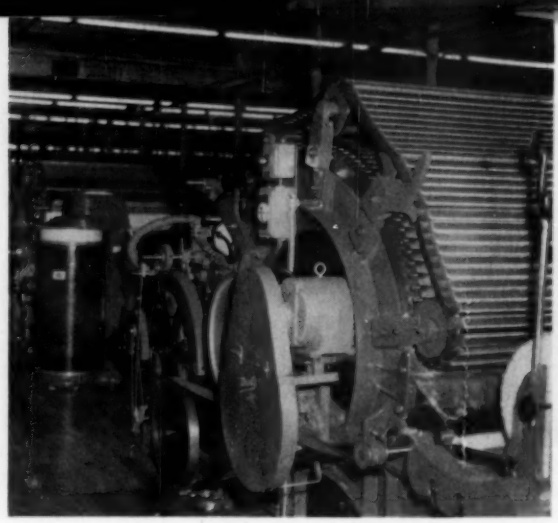
WEAVE ROOM, like all other parts of the mill, is kept very clean.



CLOTH is hand-graded on these tables after it is finished.



RECORDING SCALE in the picker room cut reject laps 4% during the first two weeks it was in use. Five Saco-Lowell pickers, equipped with McCain & McGee pneumatic lap control, produce 54½-lb. laps. Pickers run at standard speeds except for the feed apron, which is slowed down to reduce tumbling action and increase cleaning efficiency.



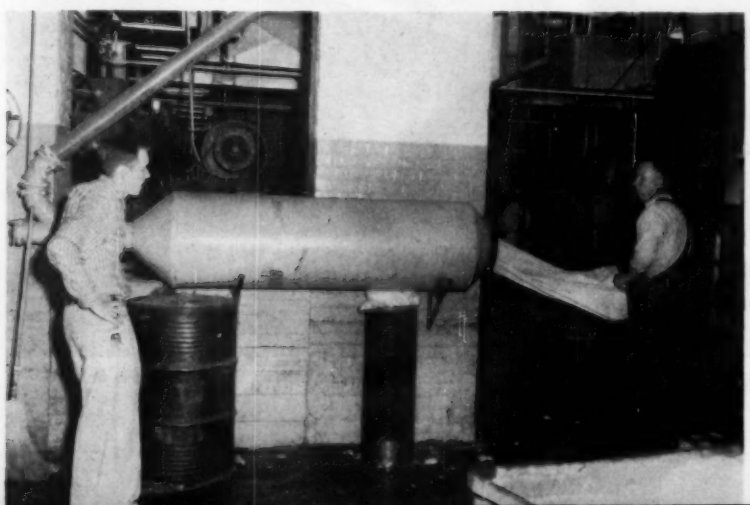
CARDS are being equipped with Wood individual drives, 18-in. coilers, Abington vacuum strippers, Rolaslivup doffers, and ball-bearing comb boxes. The card in the foreground is one of 56 that have been changed over. The other 168 machines are driven by overhead line shafting. Parkdale cards at 6½ lbs. per hr.

How Parkdale Keeps Its CARD ROOM Modern

Carding machinery and methods at Parkdale Mills, Inc., Gastonia, N. C., are constantly being improved. Latest changes include—

- Roller doffers on cards
- Large sliver cans
- New combers
- Drawing and roving modifications
- Centralized production control

FILTER BAGS are emptied and cleaned in seconds by this mill-made vacuum cleaner. Four-bag air filters used in the cleaning line are attached to each of the two condensers and the lattice opener. One additional filter will be added when the opening room is enlarged and a second line of equipment is installed.

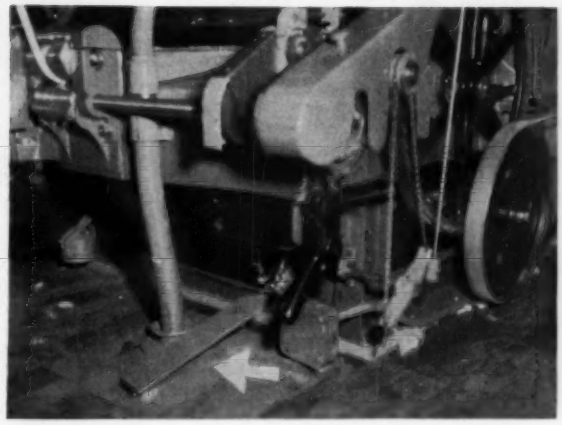


PARKDALE MILLS, INC., GASTONIA, N. C., is quick to adopt new machinery and methods that will improve its combed-yarn production. If satisfactory equipment is not available, the mill shop often builds it.

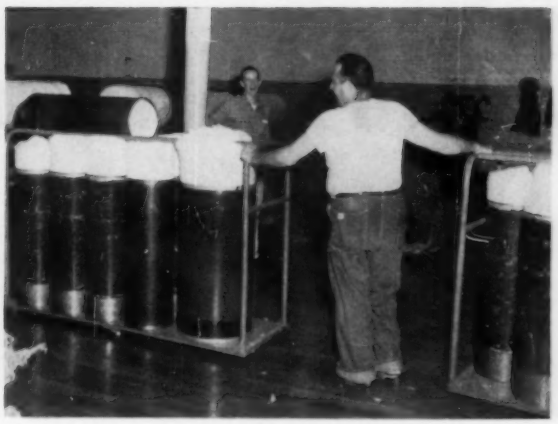
An interesting feature of the card room is the use of 56 roller doffers, similar to the doffer used by N. C. State in its high-speed carding study [TEXTILE WORLD, March, '57, p. 131]. Parkdale, however, is not attempting to increase carding speed with the doffers; they were installed to reduce waste and improve quality.

The 56 cards, changed over to supply 18x36 cans, were also equipped with individual drives and vacuum stripping.

Other improvements, made or planned, include an additional line of



ROLLER DOFFER prevents the web from breaking when the cards are stripped. Waste is reduced, and fibers receive better parallelization. Pedal (arrow) is a new attachment that the operator steps on to reverse the vacuum stripper without using his hands. Pipe from stripper runs through the floor to keep from cluttering up the room.



SLIVER CANS are hauled from the cards on mill-made trucks. The trucks roll on small ball-bearing casters, and one operator can easily handle two trucks at a time. Capacity is seven cans per truck, or about 200 lbs. of sliver. The trucks' beds are built close to the floor to minimize lifting the cans, which are tilted slightly and slid onto the truck.

opening equipment, recording scales for picker laps, extended creels for drawing frames, new combers, mill-made individual drives for roving frames, overhead bus bars for electrical outlets, and a new laboratory.

Control Board Is Used

The mill has developed a production-control system for all carding operations that includes a central control board. Posted on the board are these data from each department:

Pickers—Weekly lap tests for each picker; percent of bad laps made daily by each shift; temperature and humidity

Cards—Daily variation for 10 cards (two cards from each grinder job); percent of waste made weekly; Abington stripper chart; temperature and humidity

Drawing frames and lap winders—Weekly variation; weekly lap-yardage tests

Combers—Percent of waste made weekly; waste graph; daily variation for two Naismith combers; daily variation for each Saco-Lowell comber in graph form; temperature and humidity

Drawing frames—daily weight of drawing silver, roving, and yarn plotted on the same graph; daily sizing chart for first and second drawing processes

Roving frames—Biweekly variation for each speeder; temperature and humidity

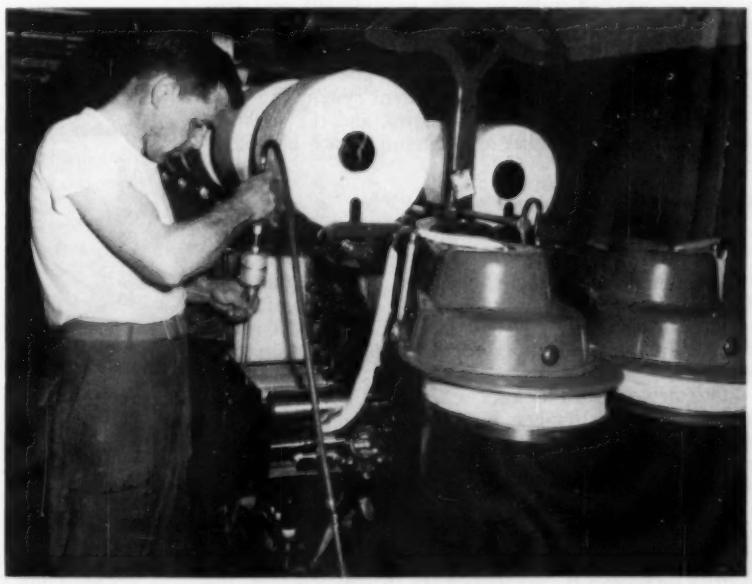
Engineering Data Are Compiled

To further centralize and control production and maintenance operations, Parkdale is preparing a book that shows at a glance almost every available fact about the mill and its operation.

The book includes, in addition to normal production data, all kinds of engineering data. Among the data are machine dimensions, aisle widths, ceiling heights, location of electrical outlets and safety equipment, wall thicknesses, machinery layouts, line-shaft bearings, motor sizes, color and type of paint used, etc.

The book, kept up to date by the quality-control department, will be on the superintendent's desk at all times so that no matter what question comes up the superintendent can find the answer in only a few seconds. This finger-tip information is especially useful when installation or modernization of machinery is being planned.

The accompanying pictures show some of the operations and recent improvements at Parkdale that have made carding more efficient.



COMBER ROLLS are picked with a mechanical roll picker that has been modified by adding a speed reducer. The comber shown here is one of nine new Saco-Lowell machines that produce 52 lbs. of stock per hour at 130 nips per minute. Cans are 14 ins. in diameter. In addition, 64 Naismith machines are in operation.

TEX— A New YARN-NUMBERING System

Eight or more yarn-numbering systems used by textile mills cause confusion throughout the world's industry.

The Textile Committee of the International Organization for Standardization, at its last meeting, recommended that the Tex unit be adopted as a basis for a universal numbering system that can be applied to all yarns.

- **What is the Tex system?**
- **How does Tex compare with Grex?**
- **How is Tex computed?**
- **Who uses Tex today?**

By B. L. WHITTIER, Department of Fabric Development, School of Textiles, North Carolina State College

TEX, A YARN-NUMBERING SYSTEM based on the weight in grams of a kilometer of yarn, eventually may replace the eight or more systems now in use.

Advantages of such a universal system are easy to see. A yarn that runs 20,000 yds. to 1 lb., for example, can have eight different numbers, as shown in Table 1.

When the textile industry was divided clearly into distinct segments, such as silk, cotton, and wool, each branch was not concerned to any great extent about the numbering system used by another branch. But the distinction between different branches of the industry has been diminishing as the use of man-made fibers and blends of all fibers and yarns has increased.

A mill producing sales yarn may supply cotton mills, woolen or worsted mills, or mills weaving silk and synthetics fabrics. A cotton or woolen mill may produce yarns designated by one system in its spinning room and weave them into a fabric containing filament or spun yarns with numbers based on a different system.

These complications are well known, and the situation will become more complex as the trend toward blends increases.

What Is the Tex System?

The Tex unit is the weight in grams of one kilometer of fiber, filament, or yarn. Linear density, expressed in terms of weight per length, is similar to the denier unit and the Grex unit. A major difference is the use of 1.000 m. instead of 9,000 or 10,000 m. which results in reduction of the number that expresses the linear density of a yarn.

This figure means a closer relationship between cotton and worsted yarn numbers in the medium range of textile yarns. In Table 2, the comparison of Tex numbers with equivalent numbers illustrates this relationship within a wide range of spun yarns.

Many ideas have been suggested for a universal yarn-numbering system. Consensus is that a direct system is desirable because the number increases as the linear density increases. If two strands are twisted together, the number of the resultant yarn is equal to the sum of the number of each strand even if the strand is of different linear density. For example, two-ply yarn made of 10 Tex and 20 Tex combined equals 30 Tex.

Table 1—Eight Ways To Number the Same-Size Yarn

Yarn-numbering system	Method	Yarn number
Jute (Spyndle)	Direct	0.72
Woolen (run)	Indirect	12.5
Woolen (typp)	Indirect	20
Cotton (hank)	Indirect	23.8
Worsted (hank)	Indirect	35.7
Woolen (cut) and linen (lea)	Indirect	66.66
Asbestos (cut) and glass (cut)	Indirect	200
Silk and synthetics (denier)	Direct	223.23

YARN weighing 1 lb. per 20,000 yds. can be numbered in eight different ways.

Table 2—Comparison of Tex With Equivalent Numbers

Tex number	Cotton number (approximate)	Worsted number (approximate)	Denier
5	120	..	45
10	60	..	90
15	40	60	135
20	30	45	180
25	24	36	225
30	20	30	270
35	17	25.5	315
40	15	22.5	360

TEX NUMBERS range upwards from fine to coarse, similar to the denier system.

Table 3—Conversion of Tex to Cotton Numbers

Tex number	Yards per pound	Cotton number
10	49,605 ÷ 840 =	59
20	24,802 ÷ 840 =	29.5
30	16,535 ÷ 840 =	19.7
40	12,401 ÷ 840 =	14.75

CONVERSION of Tex to cotton numbers is made by dividing yards per pound by 840 (yards per hank).

Another advantage of Tex is that the metric system of weights and measures is more universal throughout the world than the British-American system. The denier system, used to designate the linear density of silk, rayon, acetate, and other man-made filament yarns, is based on the metric system. The textile industry in the United States and Great Britain has become accustomed to think in terms of grams and meters and the conversion of these units into pounds and yards.

Tex Is Preferred Over Grex

The tendency has been to work toward a direct system that employs grams and meters similar to the denier system. The Tex and Grex units both have advantages over the denier system, which uses the odd number of 450 m. or 9,000 m. as a unit length. The Grex system, which uses 10,000 m. as a unit length, appeals to many people and has the advantage of providing a measure for fibers and fine filaments without using a number less than one.

The fact that 1,000 m. is a definite unit of length probably has a great deal to do with the choice of Tex over Grex. Furthermore, considerable confusion results from the close proximity of Grex numbers to their denier equivalents. Yarn numbers based on the Tex unit are distinctly different from the numbers of other systems.

It is customary in the U. S. to think of textiles in terms of yards and pounds. This thinking is natural when raw materials are bought in units of pounds and most fabricated materials are sold or priced in units of yards.

When we think of a yarn, we visualize it in terms of yards per pound. It is common knowledge in the textile industry that a 30s cotton yarn has 30 hks. per lb. and that one cotton hank is 840 yds. long. From this knowledge, we calculate that a pound of 30s yarn will contain 30 x 840 yds., or 25,200 yds.

The cotton system is based on an indirect method that uses a ratio of length to unit weight, or more specifically the number of hanks per pound. In this system, the linear density decreases as the number increases.

In the direct system of yarn numbering, based on a ratio of weight-per-unit length, the number increases in direct proportion to the increase in linear density. Two things are true: 2s yarn has twice the weight per length as 1s yarn and half as many yards in 1 lb.

The yards per pound of any Tex number can be determined as follows: No. 1 Tex yarn has 1 gram per

CONTINUED ON PAGE 170

FABRIC ROLLS are pinned together to be threaded through the inspecting machine. Fabric travels up the left side of the machine and down the right side. Bars set at a 45° angle to the top rolls reverse the fabric so both sides can be inspected at the same time. Fabric is fed to the rolls to relieve tension.

Munsingwear Inspects Fabrics On Both Sides at Once—

—with mill-made machines that reverse the fabric to be inspected. The machines are part of the quality-control program that pays knitters a bonus for good work.

AS PART OF THE QUALITY-CONTROL PROGRAM at Munsingwear, Inc., Minneapolis, Minn., knitted fabric is inspected on both sides before it goes to the dyehouse. Eight inspecting machines, designed and made in the mill, let one inspector check both sides of the fabric at once. The machines are in a corner of the knitting room.

Underwear and outerwear fabrics are delivered directly from the knitting machines to the inspecting department. A roll of fabric to be inspected is placed in the scray of the machine. The scray rolls are driven so that no excessive tension is placed on the fabric to cause distortion and shrinkage. A roller over the scray delivers the fabric to two arms placed at 45° to the roller to reverse the fabric.

The reversed fabric is delivered to the front of the machine, where it is rolled on a friction drive. New pieces of fabric are attached with safety pins to the inspected piece to rethread the machine. Spreaders are inserted in the fabric to hold it to shape for good inspection.

The machine is run slowly so the inspector can examine one side of the fabric as it travels up the left side of the machine and the opposite side as it travels down the right side. Black cloth behind the fabric helps the inspector pick out faults.

Each Fault Is Recorded

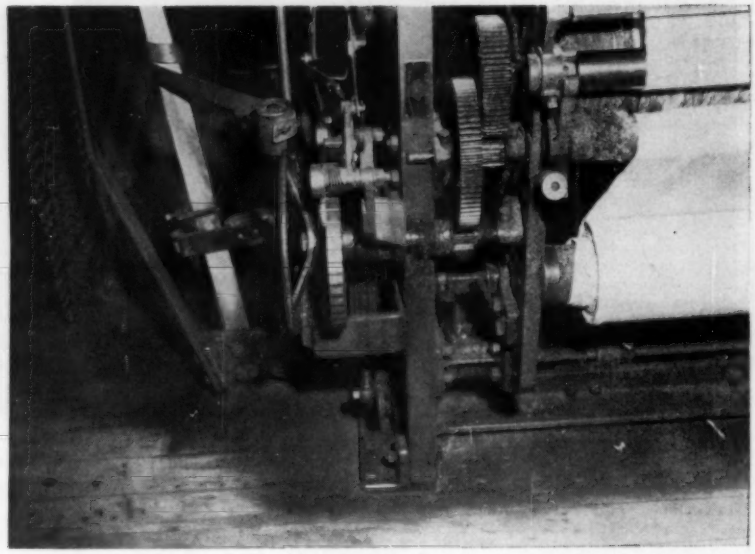
An inspector's report is made out for each roll of fabric. The machine is stopped while each fault is recorded on this report. Such faults as machine holes, drop stitches, bad needles, oil spots, and heavy threads are recorded.

Faults that run continuously for more than 10 ft. are marked on the piece ticket. Faults that number more than 10 are also reported on the ticket. The inspector also checks to see if the fabric has been pulled off the knitting machine to be examined by the knitter.

Knitters work on an incentive system that pays up to 20% bonus for good work. Knitter faults that are recorded on the report show 15 and 20% bonus limits. The 15% bonus limit for machine holes is six holes, and the 20% limit is three holes.

After inspection, each roll of fabric is weighed. The knitting ticket, which is perforated in four sections, is collected by the girl who weighs the fabric.

One section of the ticket goes back to the knitter, one goes to the payroll department, one goes to the production-control department, and one ticket travels with the fabric. A cloth ticket is printed on a portable machine with the details of the fabric and is sewed on the fabric before it goes to the dyehouse.



TAKE-UP MOTION has a half-dozen gears that must be correctly aligned and meshed. Gears that bind will cause off-quality cloth.

LET-OFF MOTION contains a number of gears of different sizes and types.

LOOM-GEAR MAINTENANCE
Can Improve Costs and Output

• A power loom has many gears of various types. One gear operates at 1,745 rpm.; another revolves only once every 5 mins. Special skills are needed by loomfixers to install, align, mesh, and maintain all these gears for peak loom performance.

By W. C. WESTBROOK, Assistant Editor, TEXTILE WORLD

THE AVERAGE LOOMFIXER installs gears in a hit-or-miss manner. Usually, little thought is given to correct alignment and meshing. There is a general belief that gears will adjust themselves through wear. Most of the gear failures on looms are not due to carelessness of the loomfixers but to lack of knowledge of correct installation and maintenance practices.

A gear that is not aligned and meshed correctly will not only wear out quicker but will often cause other parts to wear and will affect both quality and quantity of the output of the loom. A few extra minutes spent to install a gear correctly can result in many hours saved later.

Loomfixers Can Work Too Fast

Here is an example of how haste makes waste in gear installation:

Three loomfixers were assigned the job of reducing the speed on a block of looms. They replaced the 18-tooth motor pinions with 17-tooth pinions, which reduced the speed of the looms about 10 picks per minute.

Each loomfixer took a line of looms, and of course competition developed to see who could get his pinions changed first. One of the fixers soon drew ahead; and by the time the other two were halfway down the aisle, he lacked only a few looms of being finished with his line.

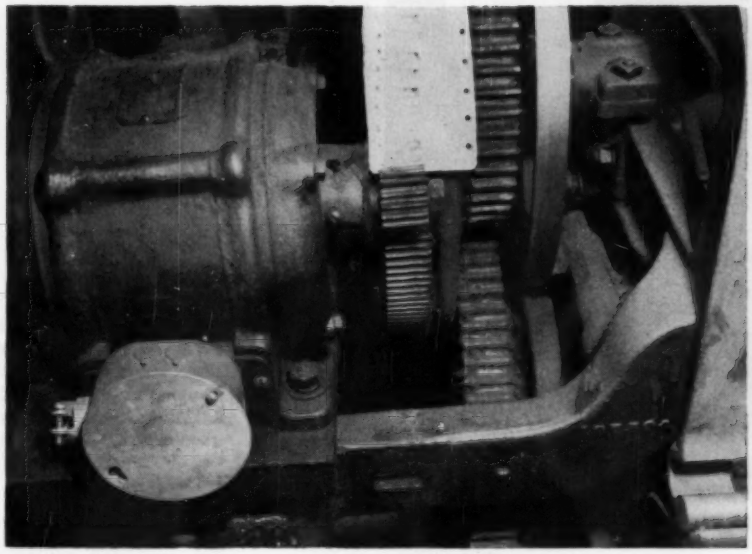
Then a weaver flagged a loom, and the secret of the fast gear changes was exposed. The speedy loomfixer was putting the smaller pinions on the motors but was not moving the motor stands to make the teeth of the pinions mesh correctly with those of the friction gear. As a result, the teeth were stripped from several friction gears before the looms were stopped and the gears properly meshed.

Changing Pick Gears Is Easy

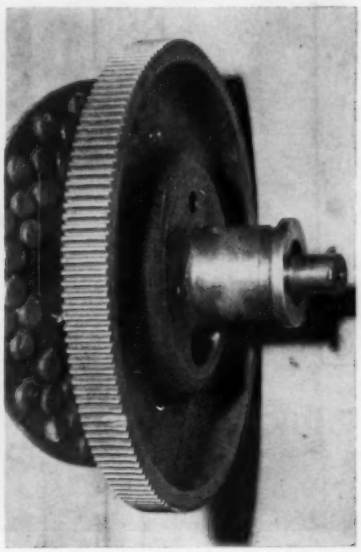
Another example involved a change in fabric construction. It was decided to use heavier filling for a certain fabric and weave it with 2 ppi. less but still have the same number of yards per pound.

Practically all the old, lighter filling was used before the gear change was started; and rather than have looms standing idle, several inexperienced men were assigned to help change the gears. Changing pick gears is a fairly simple task, and they were all changed in record time and without a loss in production.

The payoff came several days later when the first cloth with the changed construction was delivered to the cloth room and inspected. Thousands of yards of the cloth was classed as sec-



MOTOR-PINION ALIGNMENT can be checked with a sheet of paper. Indentations in the paper show the relative position of the gear teeth.



FRICTION GEAR has corners of teeth worn and chipped by misalignment.

onds because of thick places, thin places, and wavy cloth. Some of the gears and pinions were meshed so tightly with other gears that it was almost impossible to turn them by hand. Others were meshed so shallow that one tooth would occasionally jump another.

No Time Was Actually Saved

In both these instances, a little time was saved only to be nullified by corrective measures requiring much more time than needed to do a good job in the first place. Added to the time wasted was the waste of parts, material, and potential production.

A loomfixer does not need extensive knowledge of gears because most loom gears are standardized and are ordered by number. But he should know the working principles of gears and gear trains and certainly should know the correct way to install, align, mesh, and maintain gears.

Almost every type of gear is used on the modern loom. There are spur gears, bevel gears, spiral gears, internal gears, worms and worm gears, ratchet gears, and sprocket gears. Some are drivers; some are driven; and others are idle, or intermediate, gears.

To mesh correctly, two gears must have the same circular pitch and the same diametral pitch. The circular pitch is the distance from the center of one tooth to the center of the next tooth measured on the pitch circle. The pitch circle is a line through the points of contact of the teeth with those of the meshing gear. Diametral pitch is the number of teeth per inch of pitch diameter.

Teeth Need Correct Clearance

Measured radially, the distance from the pitch circle to the end of the tooth is the addendum, and from the pitch circle to the bottom of the space between two teeth is the dedendum.

The addendum is about three-sevenths of the length of the tooth, and the dedendum is about four-sevenths. The difference of about one-seventh of the length of the tooth is the clearance between the end of the tooth and the space between the teeth of the meshing gear.

Care should always be taken to see that the teeth have proper clearance. If meshed too deeply, gears will bind, wear out, and cause damage to other gears and studs. If meshed too shallow, the gears will also wear faster and backlash and the teeth will be more easily stripped or broken because the load is carried by less tooth surface.

Gears Should Also Be Aligned

When gears are installed, they should not only be meshed correctly but should also be aligned. Gears can be meshed with one end of the teeth too deep and the other end too shallow. An easy way to check both the mesh and alignment of gears is to insert a piece of paper and turn the gears so that the paper takes impressions of the teeth as it passes between them.

Many loomfixers adjust gears such as motor pinions by feel or sound. They will place a hand on the gear cover to feel for vibrations or will listen for the humming of incorrectly meshed teeth. Without stopping the loom, they will then shift the position of the pinion by tapping the motor base with a heavy hammer. It is needless to say that such practices are very inefficient.

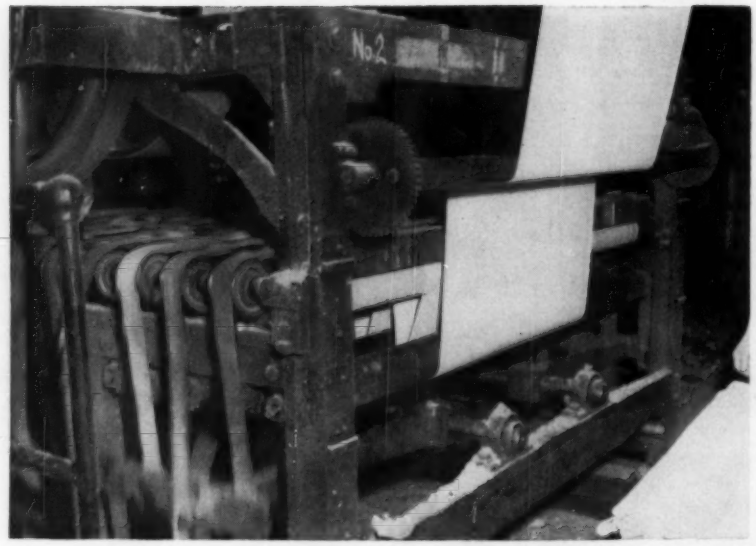
Correct Lubrication Is Important

One new gear should never be turned on another until a coating of lubricant has been applied. A clinging, nonfluid type of grease is best for most loom gears. Some of the slow gears such as those in the take-up motion are best lubricated with an oil of medium viscosity.

Since grease has a tendency to harden, especially in exposed positions where it becomes contaminated with lint and dirt, some of the old-timers lubricate alternately with grease and oil. This practice gives good results, especially on crankshaft, camshaft, and auxiliary camshaft gears.

Frequency of gear lubrication depends on many factors. For best results, a schedule should be worked out locally to fit the needs, speeds, and conditions of the looms.

If reasonable care is taken in meshing, aligning, and lubricating the gears, a marked improvement in loom performance will result. Cost of labor and repairs will be less, output will be greater, and quality will be better. A little extra time spent on loom-gear maintenance will pay big dividends.



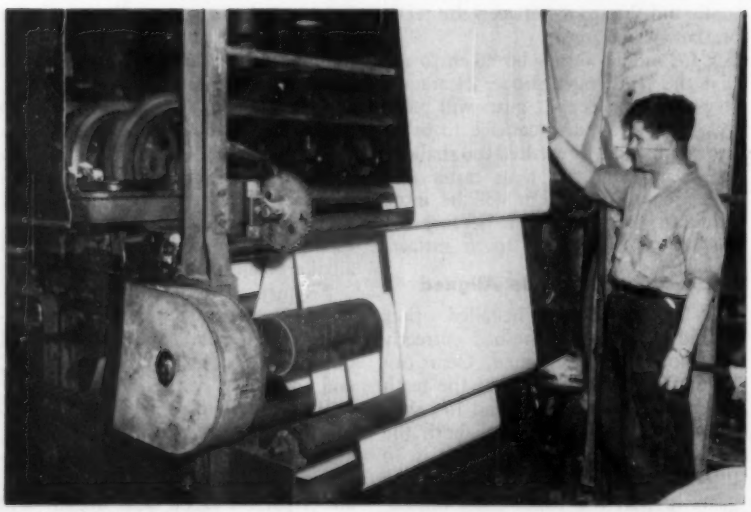
TREADLE BRUSHING is one of the methods used to lift the cut filling floats that form the pile in corduroy. Reciprocating brushes work crosswise as the fabric is pulled through the machine. Goods are dry when they are treadled.

How Merrimack Mfg. Co. FINISHES CORDUROY

Corduroy finishing involves many separate steps and has always been tagged with a high labor cost. Merrimack Mfg. Co., Lowell, Mass., combats high costs with—

- **Modern machinery**
- **Highly skilled workers**

FROM THE INITIAL CUTTING TO THE FINAL TENTERING, the watchword in corduroy finishing is "Take care of that pile." Each operation, and there are many, is designed to produce a better pile or at least to be so gentle that the pile is not harmed at any stage of its development.



ROTARY BRUSHING affects the cut floats primarily in one direction. The fabric can be rerun to pick up the floats not affected on the first run. The operation is done on wet or dry goods as needed.

Cloth-room inspection after weaving includes burling and removal of large knots and imperfections caused in weaving. At Merrimack, the fabric goes directly from the cloth room to the cutting machines without further processing.

Cutting Is an Art

The cutting operation is a separate trade in itself and consists of passing the fabric face up under a series of circular knives. Each knife is spaced exactly on the drive shaft to cut in the center of a filling float that is tied in to the base fabric at regular intervals.

Carefully fashioned two-pronged guides are inserted under the floats to raise them for cutting. The cut ends of the filling floats are then raised in the finishing process to form a wale. Corduroys commonly run from 12 to 16 wales per inch, and the fabrics weigh 1.5 to 3.00 yds. per lb.

Rope Scour Is Used

The first wet operation is desizing and scouring. Merrimack uses a conventional saturating pad to impregnate the goods with a starch digestant and lets them lie about 30 to 40 mins. before starting them through a four-kettle rope scouring range. Here soap and caustic soda remove the digested starch and the bulk of other impurities. The scour takes about 45 mins., and operating temperatures run from 160 to 180° F.

The goods are then opened and put through the first of a series of brushings designed to form a dense, even pile. This first operation, called combing, is a warpwise brushing operation on the wet goods.

The fabric is then dried and put through a rotary-plate singer to clean up the back of the fabric. A final pickup operation follows, in which small imperfections left over from the cutting operation are corrected.

Now the fabric is ready for the first of several brushings that will gradually build up the pile.

After scouring, a treadle brushing is given. The machine uses a series of brushes mounted on bars that move back and forth across the goods as they pass through.

After the brushing, the goods go to a continuous peroxide bleaching range. The open-width Mathieson steamer system is used for this work, and the usual saturating pad is followed by one long conveyor and a series of final wash boxes.

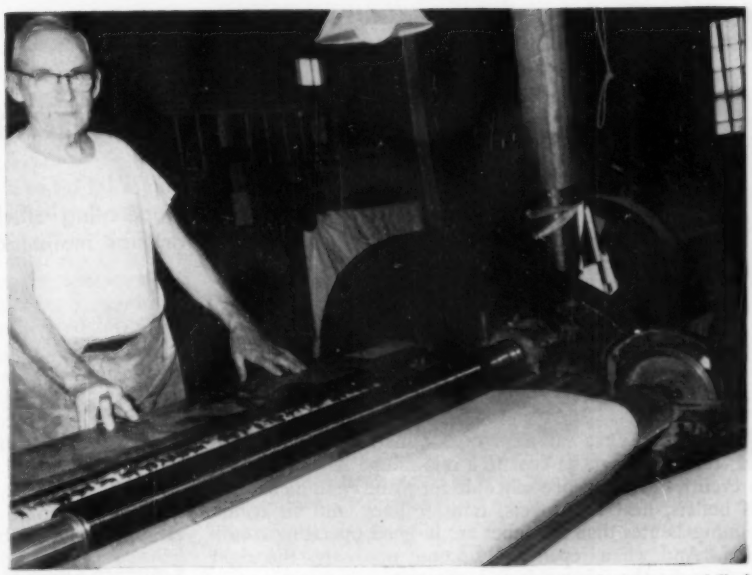
After passing through the bleaching range, the goods are brushed again while wet on a rotary brusher; then they are dried. After drying there's another brushing, dry this time, followed by a rotary brushing operation in which the face of the fabric is moistened.

The rotary brush acts on the cut filling in one direction only, and fabric is routed through the machine so that this action is felt in both directions.

At this point, goods to be dyed are routed to a new continuous dyeing range that is set up to handle any type of color likely to be used for corduroys. If yardages per shade are short, jigs are used for dyeing, but the Cook Machine Co. continuous range is used whenever it is practical.

Good control of pressures and tensions in dyeing is essential to producing a good corduroy fabric, and Merrimack finds that the one-run dyeing method made possible by its well-balanced new range also produces brighter shades.

The dyed corduroy is dried on the cans that are a part of the dyeing range; if jig-dyed, the fabric may go directly to a can-tenter range for drying.

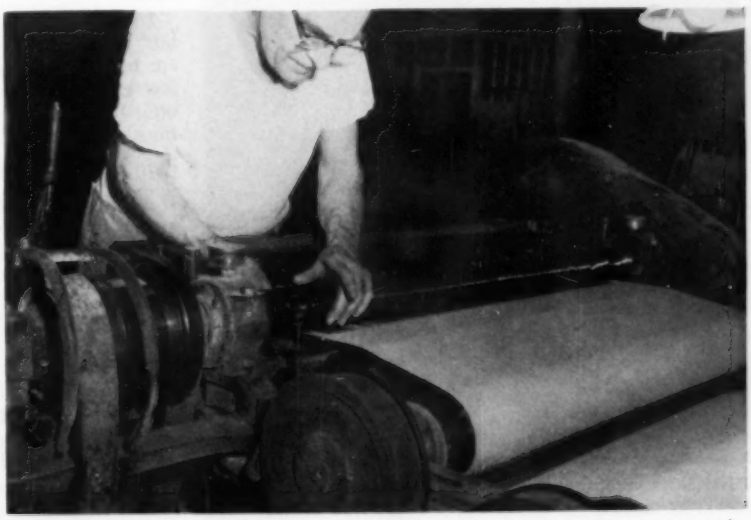


CUTTING CORDUROY has been Peter Noonan's job for 50 years. Cutters are skilled specialists. They make their own guides and keep knives in shape.

Next the goods are returned to the brushing machines, either treadle or rotary depending on the particular fabric and its apparent need, and given final runs that plump up the pile and produce the bloom and density that are characteristic of corduroy.

Final finishing treatments vary with customer's demands or the plant's own promotional ideas. Merrimack produces plain finishes, water-repellent finishes, and small amounts of resin finishes. Application is through pad-can-tenter ranges.

Regardless of the finishing touches that may impart some desirable feature to the fabric, the basic finishing lies in producing a dense, bloomy pile in the wales. Careful handling along the line to maintain and develop the pile is necessary, and Merrimack is getting good results today from a combination of modern machinery operated by personnel with many years in the corduroy-manufacturing business.



RESETTING GUIDES after passing a seam takes time. When the seam came up, the cutter retracted all the guides; now he replaces them in each wale in the new piece.

New Tools Reduce BOILER-TUBE Maintenance

• Clean boiler tubes result in higher operating efficiency for an entire mill. New tools designed especially for tube maintenance make cleaning and repair easy.

By A. JOHN, Thomas C. Wilson, Inc.

IF BOILER TUBES ARE KEPT CLEAN, maintenance cost and downtime can be kept to a minimum. A well-planned preventive-maintenance schedule for plant equipment such as boilers, heat exchangers, transfer lines, and air conditioning assures that the tubes are in good operating condition. And when repairs do become necessary, the right tools make the job quick and effective.

The basic operations of maintenance and repair on tubular equipment are cleaning and replacing tubes. The equipment necessary for these jobs are the tools that do the actual work and the units necessary for holding, maneuvering, and furnishing power for them. In addition, there are instruments for measuring and other specialized equipment.

New Tools Clean Hairpin Bends

Mechanical tube cleaners are widely used today and are the only cleaners that will do most of the all-around cleaning jobs in a plant. Recent advances in the designs of these cleaners now make it possible to clean tubes with sharp hairpin bends, curved tubes, and tubes of every size in all types of equipment. In addition, the tools can be operated by plant personnel at any time, with no special preparations or chemical analysis.

Selecting the right mechanical cleaning equipment for a job requires a knowledge of only three factors: (1) the type of tubes that require cleaning, (2) types of deposits present, and (3) type of power available. The manufacturer's representative can help by suggesting the correct cleaning tools for any unusual problems.

EXPANSION TOOL measures the torque necessary for a tight frictional joint of a new tube. The torque is measured directly at the mandrel, and rotation of the expander is stopped when the preset torque is reached.

Cleaners Operate by Power

All tube cleaners operate on essentially the same principle of turbining or punching the tubes with air, water, or steam motors or electrically driven flexible-shaft units. A revolving cutter, brush, or other accessory attached to the cleaner is driven through the tube to dislodge scale and other deposits. The choice of an accessory for a particular job depends on the type and hardness of the deposit and the construction of the tubes.

The expanding wire brush is the least expensive of the accessories. It is confined to cleaning where the deposit is neither hard nor gummy. This brush does a satisfactory cleaning job even when the tubes have numerous curves and sharp bends. In the expanding brush, the wires are arranged in tufts or clusters to form a cartridge.

Cartridge Brush Is Replaceable

Each cartridge is mounted so that the brush has some radial play. When the brush revolves, centrifugal action forces the wire tufts against the deposit. It is easy to replace the cartridge when the wires become worn. This brush is the most widely used tool for cleaning boiler tubes.

Expanding scrapers are similar to expanding brushes; but instead of wire-brush refills, hardened-steel scrapers are fixed to the sides of the holder. Scrapers are useful for removing soft, gummy, and wet deposits that would ordinarily clog the bristles of a brush. They are suitable for cleaning fly ash and soot from fire-tube boilers.

Drill-Bit Cutters Are Rugged

A drill-type cutter bit is especially useful for cleaning heat-exchanger tubes. The bit drills its way through the tube and removes scale as it goes. These bits, capable of sustained operation at temperatures up to 700° F., are generally designed with two or three flutes and have a cutting angle of approximately 120°. Some cutting edges are stubby and are ground with reverse rake angles.

Occasionally for plugged tubes, auger bits are used when the deposit is spongy. The cutter bit has a hollow center and exhaust holes through which a scavenger material flows. The scavenger, usually water or air, softens fouled matter, washes away debris, and keeps the bit cool.

Cutter heads are used in straight or curved tubes to remove hard and thick deposits. A cutter head contains cutter wheels with sharp revolving cutters that chip and pulverize the scale. Selection of a cutter head depends

on the type of deposit to be removed.

When very thick scale exists, a cutter head with a limited cutting area usually does the best job of roughing out in a short time. When the scale is not too hard, a cutter head with a greater cutting area is best.

Specialized Tool for Condensers

Sometimes tubes that have not been cleaned for a long time develop so much hard scale that a cutter head will not enter the tubes. Here, a drill head mounted on a universal joint must be used. The drill is similar in action to a cutter head, and it will enter smaller openings. It is used only as a first pass through the tube to eliminate the worst part of the scale. A cutter head used for a second pass leaves a smooth, clean surface.

One type of specialized tool for the periodic cleaning of condensers is a gun that uses water or air to force a plug or brush through the tube. The soft deposit is forced ahead and out of the tube. Recommended pressure is over 65 psi. Other tools are available for special jobs.

Sources of Power Are Optional

The power for driving the accessory is mainly determined by the power available at the installation. However, there are other considerations. Air power is the fastest and most efficient for cleaning tubes. The deposit is loosened and then blown out of the tube by the exhaust air of the motor.

The recommended air pressure is 80 to 100 psi., although cleaning is sometimes accomplished with pressure as low as 50 psi. Air cleaners are fast and powerful, but they are noisy and stir up dust.

Water-Driven Cleaners Are Quiet

Water-driven cleaners, although not as powerful as those driven by air pressure, are quieter. And the water flushes the tube simultaneously during cleaning. Operating pressure varies from 125 to 250 psi.; the smaller sizes of the tube-cleaning units require more pressure than the larger sizes.

For the higher pressures, larger volumes of water are necessary. Drainage facilities are important to drain off the water at approximately the same rate it is fed by the equipment. Water-driven cleaners should not be used for most fire-tube boilers.

Water cleaners hold down dust but are slow and require rapid drainage.

Steam Is Efficient But Dangerous

Steam-powered units are substantially the same as air-driven units and require the same pressure. There is less leeway in pressure ratings, however. At pressures below 80 psi., there may be excessive condensation; and at above 100 psi., the increased temperature may make the operation hazardous. Steam cleaners sometimes have a desirable softening effect on some types of deposits, but live steam is always a potential hazard.

Electric cleaners are quiet and sometimes are the only cleaners that can be used.

If all these sources of power are available, the choice of method depends on plant conditions and operating requirements.

Inserts Repair Damaged Tubes

Proper tools make it easy and inexpensive to repair or replace tubes that have failed in service. If a condenser or heat-exchanger tube develops a leak within the first few inches of the inlet, it is not necessary to replace the tube. Inserts are available to seal off the deteriorated portion of the tube and restore it to service.

The insert also retards or eliminates the effect of inlet-end erosion. Instead of operating at partial efficiency with plugged-off tubes, the unit continues at full efficiency.

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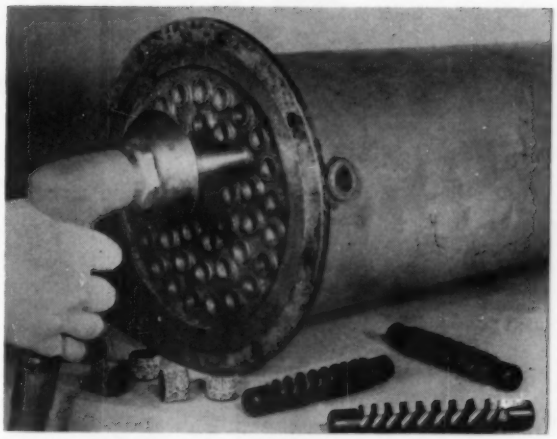
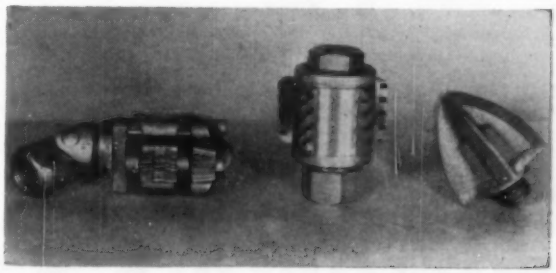
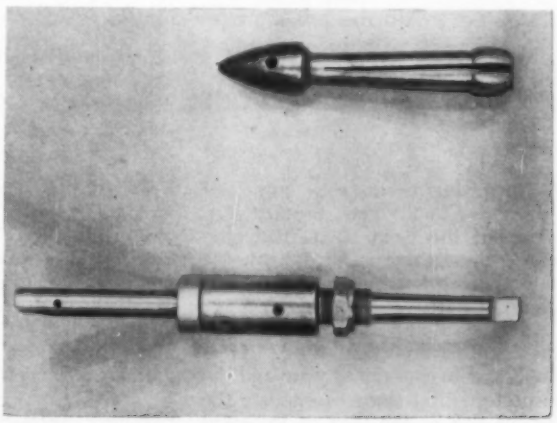


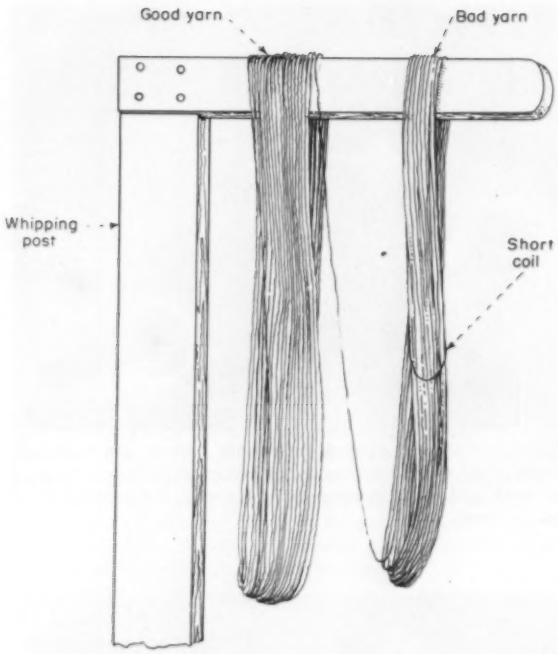
CONDENSERS are cleaned periodically with a gun that uses water or air to force a plug or brush through the tube. The plug or brush pushes soft deposits out of the tube. Air pressure of 65 psi. is used.



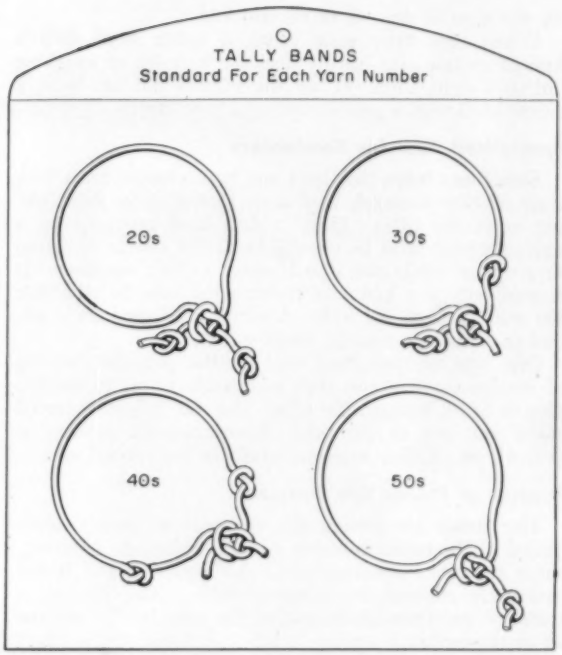
BOILER TUBES are cleaned with a drill head (right) that makes a first pass to eliminate the worst scale. Cutter head (left) removes hard, thick deposits. Expanding scraper (center) removes wet, gummy deposits.



INTERNAL-TUBE CUTTER (bottom) is used to cut a tube just back of the tube bundle to free it from the bundle when a new tube is to be put in. The pilot (top), protects the new tube end as it is inserted.



BAD YARN is separated from good yarn on the arm of the "whipping post."



SAMPLE TALLY BANDS for identification should be posted in the inspection room.

Tips on Inspecting COTTON PLY YARN

• Proper inspection of cotton ply-yarn skeins may mean the difference between profit and loss for your mill. Here are some pointers on how to do the job more efficiently.

By **FRANK VOGEL,** Quality-Control Consultant

TO INSPECT COTTON PLY-YARN SKEINS in the gray, the first step is to put the skein on a "whipping post" where there is good light. If natural light is used, a northern exposure is best.

Next, the inspector should check the identification tally band. It is important to spot mixed yarn; and the inspectors must learn to evaluate the correct size of the yarn as indicated by the tally band.

Post Sample Tally Bands

To aid the inspectors, samples of the tally bands should be posted where they can be seen easily. Where there are several different classes of work, double bands are useful to designate yarn numbers and styles.

Tally bands are then checked for standard length. If the bands are too tight or too loose, the examination should be stopped. Tight skeins should be shown promptly to the supervisor, and if necessary, he can take up the matter with the reeling department. Otherwise, bad work will occur during wet processing.

Separate Yarn by Hand

After inspecting the tally and lease bands, the examination for defects is made. A portion of the skein is held lightly in the left hand, and the individual ends are separated slightly by the fingers of the right hand. The inspector scans the yarn for defects, particularly small ones that may be buried in the skeins.

The skein is then turned over so that the under portion can be inspected. Two or more different places are examined, but it is desirable to keep the number of examination points to a minimum to reduce inspection cost.

When a skein contains several faulty coils, such as slack twist or singles, the yarn is manipulated swiftly with both hands until the faulty portion is brought to one side and separated from the good part. After the defect is separated, the first and last ends of the remainder of the skein are joined.

Small defects may be anywhere from ¼ in. to 1 yd. long. The very small ones are caused by slubs from carding and spinning, piecings or thick places from spinning, bits of waste from the

twisting operation, etc.; soiled spots can occur at practically every process.

One question is whether to remove all these small defects or to let them stay in the yarn with the hope that they will come out at the clearing plates of the finishing processes. This decision has to be made by each individual mill after some research, and a good deal of thought should be given to the subject.

The decision is important because the ruptured ends may not be joined properly, and the skein will not run off smoothly in the next process. Also, the inspector may pull the end through one of the other coils and cause a stickage or a breakage at the next operation.

Leave Ends Untied

There are times when it pays to leave the end untied after the fault has been cut out, which obviously means that the joining of the parted ends will have to be done by the worker at the next machine. This decision also is a matter that should be made by the individual mill.

In general, a knot tied where a short piece has been removed means that the coil will be short; and when the skein is manipulated in the dyeing process, the end usually breaks. The same thing is true when the skein is placed on the mercerizing machine. The spreading of the rolls, which usually causes some breakage of ends even under the best of conditions, will inevitably break the yarn if the coils are short.

If the knots are tied too short, they may pull out in the dyeing or mercerizing operation, if the yarn does not break. This action lowers the quality of the product and increases production cost. If knots are tied too long, they detract from the quality of the finished article. There should be a standard length for knots.

Post Defects on a Blackboard

A good plan is to post some of the small defects on a blackboard once a week. In weight, these defects do not amount to much; but they can cause all kinds of troubles and should be reduced to a minimum. The boarded defects should be sent to the departments of their origin, where the supervisors can discuss them with the operators.

The large faults, such as slack yarn and singles or doubles, should be returned daily to the responsible departments. The small faults, other than those boarded, also should be returned. Loose small faults can be put in envelopes for transmittal.

One plan that runs a number of

CONTINUED ON PAGE 115

A PROFIT-SHARING Scheme That Worked in England

Pasolds Ltd. reduced absenteeism from 91,230 hrs. to 57,176 hrs. in the first year of operating a profit-sharing plan. It reports—

- **Better labor stability**
- **Fewer late arrivals**
- **Greater health consciousness**

ABSENTEEISM used to be a major problem at Pasolds Ltd., Langley, England, producers of children's knitted wear. Many operations are done on the unit system; and when one operator stayed away from work, both the unit and production suffered.

A simply operated incentive system designed to reduce this absenteeism was introduced in 1955. After one year's operation, lost hours have been cut from 91,230 to 57,176 per year. Other advantages the program has given include (1) greater stability of labor, (2) fewer late arrivals for work, and (3) better health of the workers.

Labor Turnover Was High

Training new workers is a big expense in any mill, and Pasolds suffered from a high labor turnover per year. Because workers are now less inclined to leave their jobs when a dividend is due, Pasolds doesn't lose so many workers and training costs are saved.

Late startings have dropped by 2,400 during the year. Hours lost because of sickness have also dropped. This drop is attributed to workers becoming more health conscious. They now visit a doctor in good time to stave off many illnesses when their dividend is in danger.

Here's how the program works:

All those participating in the program or profit-sharing scheme, as it is called, punch time cards. The scheme is voluntary, and supervisors, office workers, and other indirect-labor workers are eligible for the dividend.

Part-time workers are not eligible for the scheme; but if they change to full-time work, they become eligible and receive the first dividend after 16 weeks of full-time work. This rule has caused several part-time workers to swing to full-time work.

For each 16-week period of work, every full-time worker in the scheme receives a tax-free dividend of 10 pounds (about $30). For each half-day absence the dividend is reduced by 10 shillings (about $1.50).

No excuses are allowed. Loss of work because of sickness will cause a loss of dividend.

The dividend is paid only for complete 16-week periods. Workers leaving the mill before the end of the period lose the dividend.

No dividend is lost during the vacation and holiday periods provided workers are not absent during the working day before or after the holiday.

Administration of the scheme is done by the office workers who tabulate pay rates. An extra ledger is kept with the time-card readings. No extra help has been used to administer the scheme.

Income taxes on the dividend are paid by the mill and are calculated at the year's end.

Dividend Is Paid to Groups

There are 620 workers in the scheme, out of a total of 750 workers. These 620 workers are split into 16 groups for the payment of the dividend. These 16 groups are spread over the whole mill, and a number from each department receive their dividends each week.

To get the program started, the first groups receive a part of the dividend until the first 16-week period was ended. The dividend is not paid out at the same time as the regular wages are paid. This extra pay day serves as an extra incentive.

The scheme has been a better success than management at Pasolds hoped for. Although 11,000 pounds (about $33,000) was paid out during 1956 in profit-sharing dividends and 25,000 pounds (about $75,000) is expected to be paid in 1957, the mill profits because of less labor turnover, greater efficiency, and lower costs.

LAWRENCE KNITTING MILLS' NEW PLANT has a precast reinforced-concrete roof that is insulated with 1-in. Fiberglas. Brick veneer over concrete-block walls also helps in economically keeping the plant at the best operating conditions.

New Ideas Help Solve Old KNITTING PROBLEMS

Moving into new quarters, Lawrence Knitting Mills, Charlotte, N. C., is using up-to-date methods to knit circular jersey fabrics that are solving some of the problems in—

- **Lint control**
- **Quality control**

AN EXPANDING PRODUCTION OF KNITTED FABRICS forced Lawrence Knitting Mills to move to a larger plant last year. The plant was built to the specifications of President Lawrence Levy to incorporate the latest ideas to knit circular jersey fabrics.

To economically keep the plant at the best operating conditions, the roof is precast reinforced concrete with 1-in. Fiberglas insulation. The walls are concrete block with brick veneer. A 1-in. air space in the walls helps insulate against heat and cold.

Machines Are 2 Ft. Apart

Pillars in the 100x100-ft. building are 50 ft. apart to allow for the most efficient machinery layout. The 13 Supreme knitting machines are laid out with a 26-in. space between the yarn racks to permit 2-ft. stepladders to be moved between the machines.

One-half of the plant is used for yarn and fabric storage. The line that supplies humidity to both the knitting and storage areas runs down the center of the room.

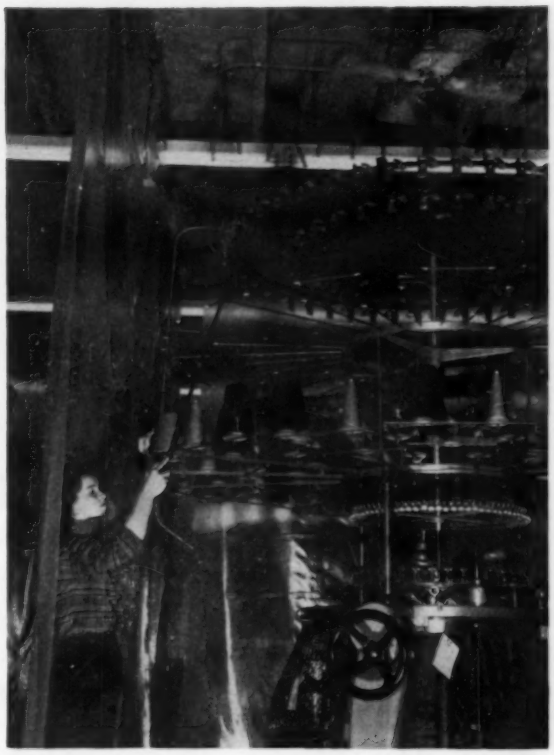
A Gardner-Denver compressor is used to supply air for the humidification system, and Foxboro controls keep the relative humidity at 65° F. A Kellogg-American compressor supplies air to blow off the knitting machines. The two compressors are connected so that lint can be blown off the knitting machines if one compressor fails.

A fan suspended about 12 ins. from the ceiling over each knitting machine supplements the air hose to keep the machines free from lint. The fans have four blades and are turned by ⅓-hp. motors. Each fan is connected to the knitting-machine-motor switch, and it turns continually while the machine is in operation.

How Lint Is Kept off Machines

This system keeps the lint off the top part of the machine and off the yarn cones. Blowing down the top part of the machine is done only once a week, but the knitters blow the lower part of the machine down after each roll of fabric has been knitted.

Because most yarns run by Lawrence are dyed in many different colors, each machine is separated from its neighbor by plastic sheets. This sheeting, which is 0.005-in.-thick polyethylene, hangs from the ceiling and reaches to the floor. The sheets are held together with adhesive



FANS over each machine keep the lint from settling on the top part of the machine. Polyethylene curtains separate all machines knitting colored yarns.

tape, and they keep the floating colored lint from the area.

Double 8-ft. strip lamps are suspended in the center of each alley near the ceiling. To supplement this lighting, each machine has a 15-w. fluorescent light attached to the safety cage to illuminate the fabric and permit the knitter to do a better inspecting job.

A Stitch-O-Meter is used to set up the knitting machines and keep them producing top-quality fabrics. When a machine is to be set up, the stitches are first adjusted to draw a stitch that is approximately correct. This setting is done by marking the yarn above the stop motions and turning the machine.

When this setting has been completed, the meter is used on each feed. The yarn is wrapped around the measuring wheel of the device, and the machine is run for three revolutions.

Meter Unit Equals One Stitch

The stitch cams are given their final adjustment while the yarn runs over the measuring wheel. One unit on the meter dial has been found to be equal to one stitch.

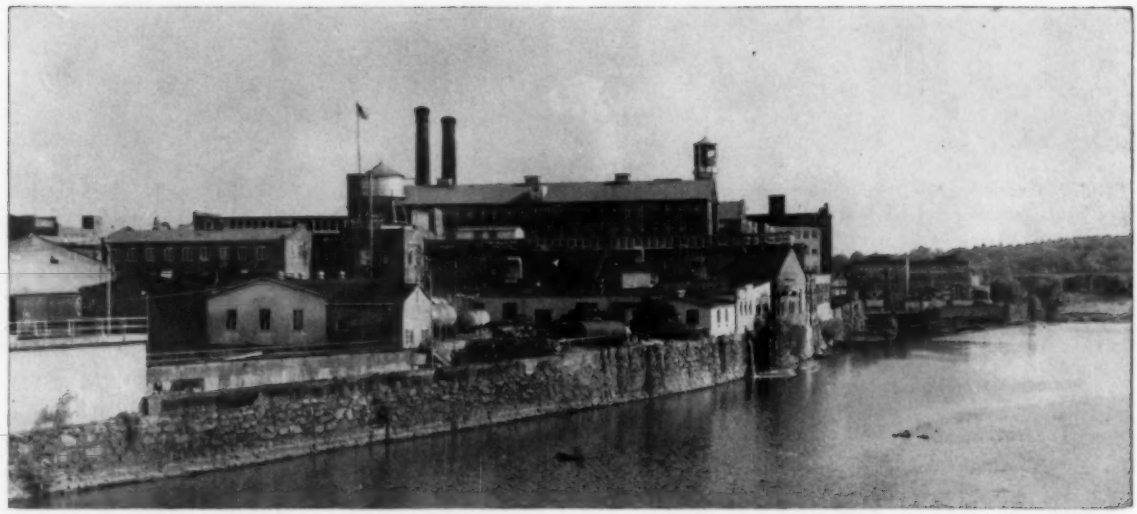
Patterned fabrics are also set up with this meter, and the meter is used when colors are changed because different colors of the same yarn number influence the stitch. The meter is used to check the quality at regular intervals and to check the yarn if wrong yarns are suspected in the fabric.

The machines are 18- or 20-cut with 26-in.-dia. cylinders. Yarn sizes range from 15s to 24s, but most yarns run are 18s or 36/2s. Knitting machines are pattern-wheel and plain-jersey machines with 32, 64, or 96 feeds.

Many different patterns are made in up to 16 different color combinations. Samples for spring and fall lines are made throughout the year when machines are available.

When a machine has been changed over, the first roll of fabric from the machine is checked over a lighted frame. Subsequent rolls are spot-checked over the frame.

YARN METER is used to set up each machine after a style or color change. The cams are first set to a stitch that is nearly correct, and then they are set accurately with the meter.



BUILDINGS of Eagle & Phenix Div., Fairforest Co., Columbus, Ga., as seen from bridge spanning the Chattahoochee River.

LOOMS at Eagle & Phenix Are Built for Special Weaves

The 400 X-2 looms at the Eagle & Phenix Div., Fairforest Co., Columbus, Ga., are designed for hard-to-weave fabrics. They have—

- Draper-Diehl power transmitters
- Improved center forks
- High-roll ratchet take-up motions

INSPECTION of loom is made by Overseer Marvin Cox assisted by Second-Hand Curtis Howard.

AT EAGLE & PHENIX DIV., Fairforest Co., Columbus, Ga., sateen, corduroy, and cord suiting are being woven on 400 looms especially equipped for these fabrics. The looms are Draper X-2 models of 50-in. width.

The looms have the ratchet high-roll take-up motion coupled with the improved Bartlett let-off. The mill believes that weavers can better control thick and thin places, major defects in the type fabrics being woven, with this take-up and let-off combination. Sateen, corduroy, and cord fabrics are woven under high tension and with a heavy beat-up that places unusual strain on the loom, especially on the let-off and take-up motions.

The looms have the Draper No. 546 center fork. This fork has a

simplified knock-off that eliminates the knock-off, bunter and trip mechanism on top of the loom. The K. A. electric warp stop motion is used.

Endless Checkstraps Used

The looms are driven by Draper-Diehl power transmitters at a speed of 168 ppm. Other equipment includes midget filling feelers, Stafford thread cutters, and clock-spring tops.

The 400 X-2 looms are fitted with endless leather checkstraps. Hubert Adams, assistant superintendent at Eagle & Phenix, has this to say about these controversial straps:

"We have proved by actual use that the endless checkstraps are more economical and cause less downtime than the conventional slotted straps in our mill. Our biggest problem was in proving the advantages of the endless straps to our loomfixers and teaching them the correct way to install and adjust them. Now, we are all sold on the endless checkstraps for our high-speed looms."

A Uster portable tying-in machine is used to tie warps at the looms. Some of the 28-in. warp-yarn beams will run in the loom for 12 weeks or more. Only three men are needed, one of them part time, to keep the tying-in machine in operation. The machine ties an average of 700,000 knots per week.

Two Racks for Tying-In Machine

The tying-in procedure is: one man cuts out the exhausted warp and places a full beam in the loom. He leases the warp and pattern to the extra knotter rack. The machine operator then places the knotter on the rack and ties the ends. The first man gets the rack that has just been vacated by the knotter, takes it to the next loom with an exhausted warp, and repeats the procedure.

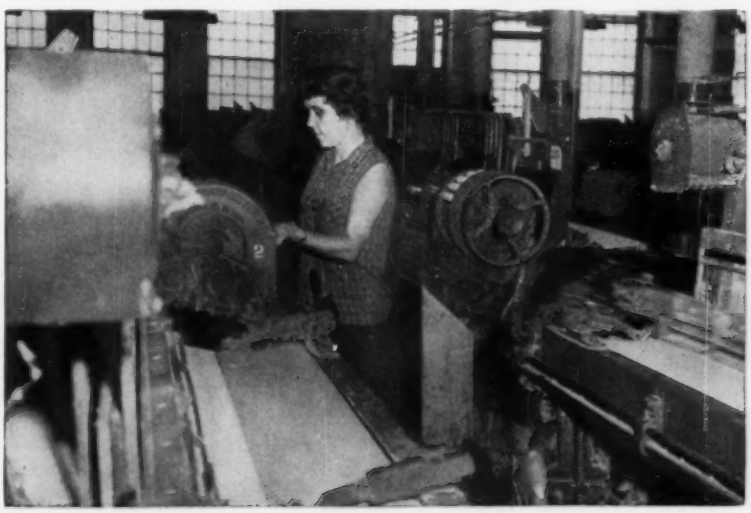
The tied warps are pulled over and started by a third man who also ties in some warps that are tied to the patterns by stationary machines in the drawing-in room. The looms are cleaned, lubricated, and checked by the cleaners and loomfixers while the warp is out.

The Eagle & Phenix weave room has evaporative air-changing systems and atomizer-type humidifiers. The standard temperature is 88° F., and a relative humidity of 85% is maintained.

Denims, flannels, suedes, draperies and similar fabrics are being woven on other looms in the mill. But the 400 X-2 looms are proving the value of machinery especially designed and equipped to do a specific job. These looms are so versatile that they can easily be converted to other weaves when desired.

SHIPPER of Diehl-powered loom is checked by Loomfixer James McWhorter.

LOOM is started by Weaver Henry Mount. A weaver jobload is 55 looms.



BATTERYHAND Thelma Pritchett keeps batteries replenished on 75 looms.

How To Dye and Print DACRON-COTTON BLENDS

- The production of Dacron-cotton fabrics has grown from 100,000 yds. in 1953 to an estimated 100-million yds. in 1957
- Here are the latest developments in dyeing and printing this blend

THE DYEING METHODS OUTLINED BELOW are designed to produce colorfastness that is compatible with the other wash-and-wear characteristics inherent in the popular 65% Dacron, 35% cotton blend of fibers.

Disperse dyes that have been carefully selected are satisfactory for the Dacron component, and vat dyes are preferred for the cotton.

How Yarns Are Dyed

Dacron-cotton yarns are first dyed at 250° F. with disperse colors to dye the Dacron. To insure optimum fastness on heavy shades, a scour at 200 to 225° F. should follow the dyeing operation. Use 1 gal. per liter caustic soda and 1 gal. per liter Sitol oxidizing agent and Product BCO surface-active agent in the bath.

For light shades, if the bath can be cooled quickly to 108° F., the vat colors can be added directly to the disperse dyebath and pigmentation carried out while the bath cools to 160° F.

The usual reduction and oxidation procedures follow; and then the yarn is given the scour suggested above.

By using carriers, the Dacron can be dyed at 208° F., but often this method is less economical and the fastness properties are not equal to those obtained by pressure methods. A thorough scour between dyebaths is necessary when the Dacron is dyed at 208° F.

Dye Selection Is Important

Because most fabrics made from Dacron-cotton blends are heat-set to improve stability and reduce pilling, it is necessary to choose disperse colors that will not sublime under heat-setting conditions of 1 to 3 mins. at 325 to 375° F. Also, resin finishes are sometimes used to improve fabric hand and stability, and these resins require curing for 1 to 3 mins. at up to 330° F.

From a paper presented before AATCC by P. J. Meunier, E. I. du Pont de Nemours & Co., Inc.

Many laboratory tests were made in which Dacron-cotton blends were dyed with disperse colors and then given a vat-dyeing routine without dye to check the staining effect of the disperse colors on the cotton. A finishing process simulating heat-setting and treatment with Zeset S resin was also applied to the yarns.

From these tests, it was found that the disperse dyes shown in the accompanying table are satisfactory to use on Dacron-cotton blends.

In addition, Latyl Diazo Black B and Acetamine Orange GR are satisfactory when coupled with Latyl Developer B at a pH of 5.5.

Concentrations of dyestuffs above 1 to 1.5% should be avoided because some of the colors will sublime slightly if applied at 2.0%, but heavy shades can generally be produced well within the limits of the dyes in this respect.

A range of shades in which the Dacron was dyed with these colors and the cotton was dyed with vat dyes was subjected to the heat-setting and finishing treatments commonly used without showing objectionable staining.

Other tests included hot pressing for 1 min. at 250° F., wet pressing for 2 mins. at 300° F., and sublimation at 1 min. for 375° F. Fastness to these tests was very good.

Fabrics made of dyed and undyed Dacron-cotton yarns pass the AATCC chlorine-bleach test but are sensitive to the AATCC peroxide-bleach test. Staining can be reduced in peroxide bleaching by lowering the J-box temperature to 180° F.

How To Handle Fabrics

Fabrics made from Dacron-cotton blends can be dyed at slightly under 212° F. in a beck or jig. Where both fibers are to be dyed a light shade, the Dacron should be dyed first. The reducing bath used for the vat dyeing of the cotton will serve later as a scour bath for the disperse dyes.

In heavier shades the cotton may be dyed first; but if Dowicide A is to be used as a carrier, it is better to acidify the bath before adding the Dowicide A to avoid shade changes in the vat color caused by the strongly alkaline carrier. Superior lightfastness can be obtained if Latyl Carrier A is used for the disperse colors.

Fabrics up to 9 oz. per yd. can be dyed in the Burlington dyeing machine at 250° F., and heavier goods can be handled in the Barotor. The dyeing routine is similar to that used in dyeing packaged yarns.

Latyl Yellow YL	Celanthrene Violet BGF
Latyl Yellow 3G	Latyl Blue 4R
Latyl Orange 3R	Latyl Blue RL
Latyl Cerise B	Latyl Blue RB
Latyl Scarlet FS	Latyl Blue FL
Latyl Red GFS	Latyl Brill. Blue 2G
Celanthrene Fast Pink 3B	Latyl Brill. Blue BG

THE COLORS ABOVE dye Dacron and do not stain cotton during following finishing procedures.

How To Dye Black and Maroon

If a pressure vessel is available, Latyl Diazo Black B or Acetamine Orange GR, applied simultaneously with Latyl Developer B at a pH of 5.5, will produce satisfactory black and maroon shades. The procedure can only be used at 250° F. without a carrier.

The colors can be handled in open equipment with a carrier at 208° F., but the tendency of these colors to tar out in the presence of a carrier requires a slightly different procedure if they are to be used in circulating machines.

In such cases, the base is applied with a carrier; and then Acetamine Developer AD Extra is applied in a separate bath without a carrier, followed by diazotization to couple the components. Latyl Developer B is not recommended in this process because of its low affinity for Dacron at 208° F. without a carrier.

The sublimation problem is less on solid shades dyed on piece goods. In addition to the dyes listed in the accompanying table, the following dyes may be used, particularly in low con-

centrations, for piece dyeing:

Celanthrene Fast Yellow GL
Acetamine Fast Yellow 4RL
Latyl Orange R
Latyl Violet 2R
Latyl Violet BN
Acetamine Rubine B

How Continuous Dyeing Is Done

The pad-steam and Thermosol processes can be used to dye Dacron-cotton blends continuously.

The dyeing falls into three categories:

1. Pastel shades in which only the cotton is vat dyed by the pad-steam method.

2. Light to medium shades, in which only the Dacron is dyed with disperse dyes by the Thermosol process.

3. Medium to heavy shades that require the Thermosol process for the Dacron and pad-steam or pad-jig process for vat dyeing the cotton.

Pastel shades can be produced by dyeing the cotton only by the pad-steam process. Darker shades require that both components be dyed.

The Thermosol process consists of padding the fabric with disperse dye, drying it, and subjecting the fabric to a temperature between 400 and 450° F. for 15 to 60 secs.

The process requires no carrier, and heat-setting and shade development are done at the same time. For shade control, it is important that the dyes used will not vaporize excessively during the heat treatment.

The colors previously recommended for yarn dyeing are suitable for the Thermosol process with the exception of Latyl Diazo Black B and Acetamine Orange GR, which require coupling and diazotization for full color development.

Light to medium shades with good coverage can be produced by dyeing only the Dacron by the Thermosol process.

To get optimum dye fixation, the following times and temperatures are suggested for the heat treatment:

Temperature	Time
400° F.	60 to 90 secs.
425° F.	30 to 45 secs.
450° F.	15 to 30 secs.

Good air circulation in the heat-treating unit accelerates dye absorption at the lower temperature but aggravates vaporization of some dyes at 475 to 500° F.; for this reason, 450° F. was picked as the optimum temperature. Heavier fabrics show better color utilization at the higher temperature.

Vat dyes do not work well on Dacron dyed by the Thermosol process; and if they are used to dye the cotton

CONTINUED ON PAGE 152

Pointers on Selecting TRAVELERS for SPINNING

To pick the right traveler for your spinning frame, watch out for—

- Travelers that are too light
- Correct circle for each traveler
- Lift and speed of the frame
- Condition of spinning rings

By GERARD MAILLOU

ONE OF THE MAJOR CAUSES OF BAD SPINNING is using the wrong traveler. There is no fixed formula that will tell you the exact size and weight of traveler to use for a given yarn number because of the variables involved. Some of the factors entering into traveler selection are condition of rings, length of lift, spindle speed, and front-roll speed.

Increase Weight Two Numbers

A rule of thumb is to increase the traveler weight by two numbers for each higher yarn number. For instance, if you are using a 2-0 traveler for 30s warp and change to 32s warp, a 4-0 traveler would be required under normal conditions.

Frequently, it is necessary to increase the weight of the traveler even though the yarn number remains the same. If you add ¾ ins. to the lift on a warp frame, for example, you may have to use a traveler three numbers heavier.

Frame speed has a definite effect on traveler performance, and tests should be run on travelers to find the right weight for each new speed.

A common fault among spinning-room overseers is to use travelers that are too light. One indication of underweight travelers is a sharp increase in ends down after the bobbin is three-fourths full. A traveler one number heavier frequently will reduce ends down 50%.

Travelers, in effect, become lighter as rings wear out because they ride easier. If your rings are worn, you will usually get better spinning by increasing traveler weight.

Circle Affects Performance

The circle used can have a very definite effect on traveler performance and life. A 3-0 traveler with a ¾ circle may give 30 ends down per thousand spindle hours; but if you change to a 3-0 traveler with a 1 or 1½ circle and use it on the same number and under the same operating conditions, ends down may jump to 100 per thousand spindle hours.

Break In Rings Carefully

The kind of rings used and the way they are broken in have a very great influence on traveler performance. In the old days, it was common practice to wash rings in very hot water, wipe them dry, and oil them before installation. Modern rings are oiled by the manufacturer and should not be washed. It is necessary only to wipe the rings with a dry, clean rag.

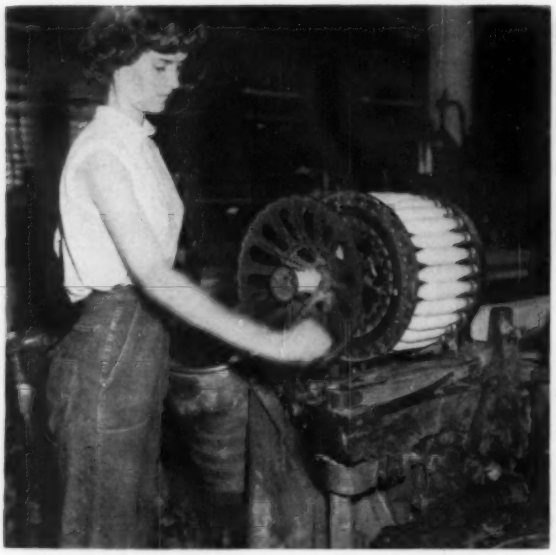
In our mill, we break in rings with travelers that are three or four numbers lighter than normally used for the yarn number being spun. These travelers are changed every 8 hrs. for two or three days, and then we start increasing the traveler weight one number at a time until standard weight is reached. Our frames are operated at standard speed while the rings are being broken in.

Traveler-Changing Schedules Vary

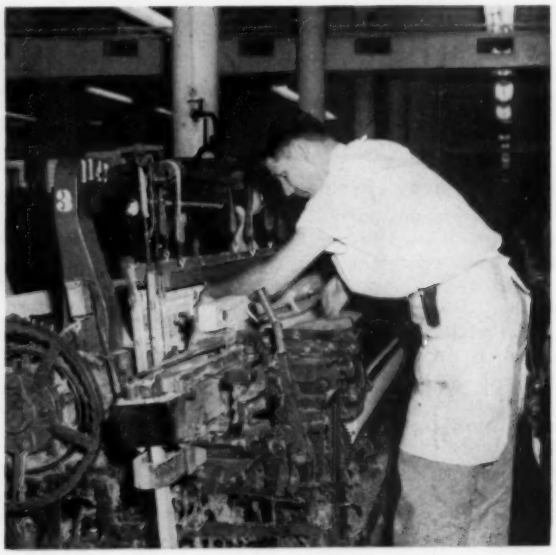
There is no set interval for changing travelers that would apply to all mills. Each mill should make ends-down tests and study the wear on the travelers and rings during the break-in period to determine the best schedule for its particular operation.

When rings become well worn, we change to the type of traveler that rides on the inside of its elbows instead of on the points. These travelers run as well as if the rings were new, and they do not fly off.

A final point to watch in selecting travelers is to make sure that you pick the proper traveler for the ring flange. Never use travelers designed for rings with a No. 1 flange on rings with a No. 2 flange, or vice versa. If you put on the wrong traveler, expect very bad spinning and a sharp increase in ends down per spindle.



FILLING is quilled, and Batteryhand Edith Phillips keeps 92 batteries filled.



LOOM SPEEDS and weavers' jobloads vary. Weaver Garnet Smith tends 36 looms.

How Pepperell WEAVES Sheets

• At its Pepperell, Ala., mill, Pepperell Mfg. Co. is producing sheets of solid colors, multistripe designs, and fancy borders. Here's how they are woven—

PEPPERELL MFG. CO. IS ONE OF THE LEADING MAKERS of quality sheets; and its plant at Pepperell, Ala., is geared to make white, colored, and striped sheets. For solid colors and pastel shades, the fabric is woven in the gray and dyed. Multistripes and colored borders are woven in with yarn-dyed warps.

Pepperell sheets are woven in various widths up to and including the full-size 90-in. sheets. The looms used are Draper L and XL models of 64- to 99-in. width. The loom speeds vary from 94 to 126 ppm. A dozen XP-2 looms of 90-in. width were started recently at 140 ppm.

Handrails Are Yellow

The looms are all motor-driven, some of them having the motors mounted on the arch ends, with power transmitted to the clutches by means of V-belts. The harnesses are cam-activated and are lifted by double boss-roll tops.

Single-side filling forks, midget filling feelers, and Stafford thread cutters are used. The looms have double-roll temples, and the take-up rolls are rubber-covered. Drag rolls are used on some of the looms weaving percale. All the sheeting is woven with a tape selvage.

The looms are equipped with four-bank electrical warp stop motions. The handrails are all painted yellow. The painted rails are easy to clean, and the bright color is a visual aid when warp ends are drawn through the reed.

A typical sheeting construction at Pepperell is 90-in. width, 88 warp ends and 94 filling ends per inch, with a weight of 1.53 yds. per lb. Both warp and filling yarns are 34s combed cotton. The same fabric construction in 81-in. width has a weight of 1.68 yds. per lb.

Supervisors Check Looms

Weavers' jobloads vary from 32 to 36 looms, depending on loom width and speed. Using quilled filling, the average batteryhand loads 108 looms.

There are 65 looms on a section, and each loomfixer is responsible for preventive maintenance of one-third of the looms on his section. Supervisors make periodic checks of the looms assigned to the fixers on the preceding shift for an impartial follow-up of maintenance practices.

The weave room at Pepperell has central-station evaporative air-changing systems. The standard temperature is 80° F., and relative humidity of 88% is maintained. Atomizer-type humidifiers are used.

Although basically a sheeting mill, Pepperell's Alabama mill also weaves drills, twills, and jeans. Both combed and carded yarns are used. The machinery and equipment are adaptable to a wide variety of fabrics, fibers, and blends.

The mill is a wholly integrated unit that dyes, bleaches, and mercerizes fabrics in addition to manufacturing them. Pepperell sheets are treated to control shrinkage.

Determine the Number of YARN-IRREGULARITY TESTS—

—with these calculations that give the precision of an unevenness value.

To test whether yarns are up to standard or whether one yarn is more even than another, "t" tests for testing significant differences can be used.

By W. HODGSON

A PROBLEM THAT FACES QUALITY-CONTROL MEN when they test sliver or yarn for irregularity is to determine when enough tests have been made on a sample to give an acceptable or reasonably accurate measure of the irregularity.

The number of tests to be taken is governed by several factors. The more-important factors are: (1) the degree of accuracy required, (2) the probability level at which you desire to work, (3) the spread or dispersion of the individual readings from the tester, and (4) the length of yarn integrated for each test result.

Usually an accuracy of ±4% or better is required at the probability level of 95%. To obtain this accuracy, a minimum of 20 readings is usually found necessary for average yarns when the integrated length is about 12 meters.

If the results are erratic, a larger number of readings have to be taken to obtain the desired precision. The number of tests is a function of the dispersion of the results and not of the tester characteristics.

Unevenness Is Calculated

Here are the stages in the calculation of the precision of an unevenness value:

1. Calculate the mean or average of the individual results
2. Calculate the coefficient of variation between the results
3. Calculate the precision of the mean by using this formula:

$$\text{Precision} = 2 \times \frac{\text{coefficient of variation between the results}}{\sqrt{\text{number of tests}}}$$

The calculations are best illustrated by the accompanying test results and this example:

Sample size $n = 10$

Mean value of irregularity

$$\bar{x} = \frac{\Sigma x}{n} = \frac{114.0}{10} = 11.4\%$$

Best estimate of population standard

$$\text{deviation} = \sqrt{\frac{\Sigma x^2 - n\bar{x}^2}{n-1}} = \sqrt{\frac{1307.3 - 10 \times 11.4^2}{10-1}} = \sqrt{\frac{1307.3 - 1299.6}{9}} = 0.92 \text{ (approximately)}$$

Coefficient of variation between results

$$\frac{0.92 \times 100}{11.4} = 8\%$$

Precision (p. = 0.95) =

$$\frac{2 \times 8\%}{\sqrt{10}} = \pm 5\% \text{ approximately}$$

The mean value of irregularity lies between 11.4% ±5% of 11.4% or between 10.8% and 12% at the probability level of 95%. This means that there is the chance that five times out of 100 when similar samples were tested, the mean value of irregularity would lie outside these limits.

If greater precision is required, further tests would have to be taken so that n, the denominator in the above expression, would be larger. Suppose that after taking 10 more tests and the coefficient of variation between values remained the same; the precision would then be:

$$\text{Precision} = \frac{2 \times 8\%}{\sqrt{20}} = \pm 3.5\%$$

"T" Test Determines Irregularity

If a quadratic integrator is used, the calculation is similar. The coefficient of variation of the coefficient of variation of irregularity is calculated instead of the coefficient of variation of linear or percentage mean deviation.

The sampling must be random because testing continuously from one or two packages gives results of limited value.

The significant difference in irregularity between two yarns can be checked by carrying out a "t" test. Here's how a "t" test is made for a single mean:

Test values (% mean linear deviation) (x)	Values squared $(x)^2$
10.3	106.09
11.1	123.21
10.5	110.25
10.4	108.16
12.2	148.84
12.5	156.25
11.6	134.56
10.8	116.64
12.9	166.41
11.7	136.89
Total 114.0	1,307.30

RESULTS from 10 tests are used to find the precision of the unevenness value.

Suppose that the mill standard for irregularity for a yarn is 12% mean deviation measured within 8 yds. After a lot change, 10 evenness tests give a mean irregularity figure of 11.4% with a best estimate of population standard deviation between results of 1.1. The question is asked: is the new lot more even than the old lot?

The "t" value is calculated as follows:

$$\text{"t"} = \frac{\text{difference between means}}{\text{standard deviation}\sqrt{\frac{1}{\text{sample size}}}}$$

$$= \frac{12.0 - 11.4}{1.1\sqrt{\frac{1}{10}}}$$

$$= \frac{0.6 \times 3.16}{1.1} = 1.7$$

Test Shows Small Irregularities

Checking against a "t" table with n-1 degrees of freedom (V = 9) where the 5% value is found to be 2.26, this figure is greater than the calculated value 1.7; so the difference in irregularity between the two yarns is not regarded as significant.

The calculated value "t" corre-

CONTINUED ON PAGE 115

CALENDER COATING is used for producing thicker coats of resin in one run. The plastic is laid between upper rolls not shown, squeezed to a thin film, and combined with the fabric as both film and fabric pass through the lower nip.

How Federal Industries Produces COATED FABRICS

• Textron's Federal Industries Div. is a primary supplier of automotive fabrics, luggage materials, and wall coverings. The plant buys gray goods and basic chemicals and converts them into many styles of vinyl-coated materials ready for the market.

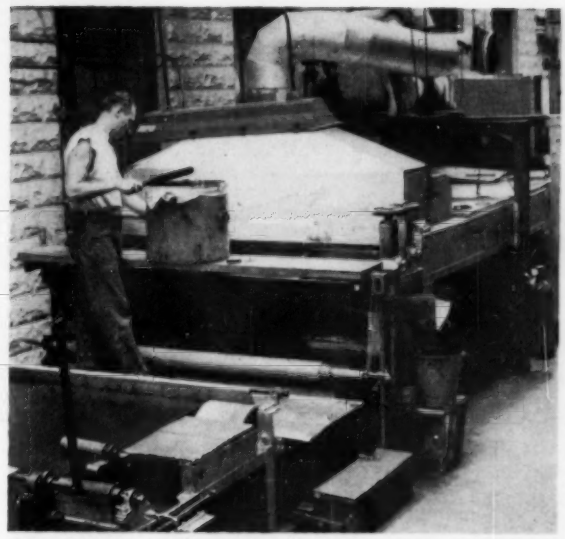
CLOSE CONTROL OF RAW MATERIALS, fabricating know-how and good styling help Federal Industries, Div. of Textron, Inc., at Belleville, N. J., get its share of the coated-fabric business.

Federal produces some unsupported vinyl, but the great majority of the plant's output is backed with knitted or woven cotton fabrics or with non-woven materials. There is still demand for pyroxylin-coated fabrics, and Federal has long been expert in this field.

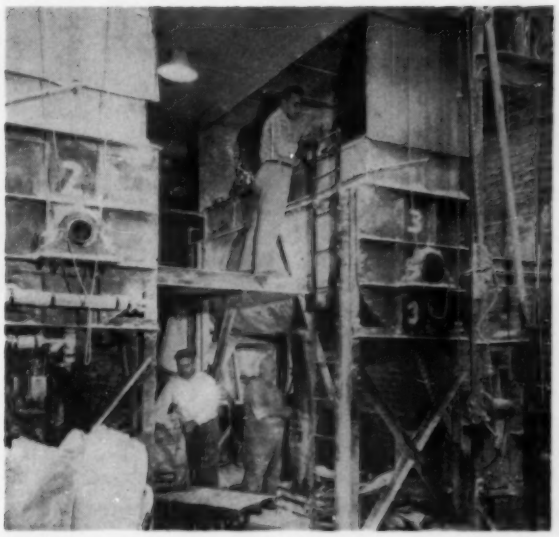
The cloth is prepared in Federal's own dyeing plant before being coated. The mill operates continuous dyeing equipment and jigs. Dyeing problems are not complicated because high fastness standards to light and washing are not necessary; so direct colors serve most requirements. The plant uses jigs to dye runs that would not be practical on a continuous range. Napping that is required in some lines is done on Federal's Woonsocket nappers.

In addition to the regular dyeing process, cloth used for Fedwall—Federal's wall-covering material—is also treated in the dyeing plant to render it resistant to mildew spores and fire. The coating is treated in a similar manner; so the final product is completely mildew and fire resistant throughout.

The basic fabrics most used include 3.00-yd. soft-filled sheeting, 1.32-yd. sateens, 1.85-yd. drills, and an increasing amount of knitted fabric. The latter is particularly suited to upholstery because its flexibility helps in tailoring around curved surfaces. Cotton, synthetics, or a combination of both have proved highly satisfactory as backing materials.



KNIFE COATING is a primary means of applying vinyl resins to fabric backing. The vinyl in the tub at the head of the range flows onto the goods below. The thickness of the coating is regulated by the knife edge that bears against the cloth.



FIRST MIXING takes place in this blender. For compounds used in calender coating, all ingredients—resins, fillers, pigments, plasticizers, extenders, and stabilizers—go into the blender and are loaded into a Banbury for further mixing.

Plastic raw materials include PVC resins, plasticizers, stabilizers, extenders, and pigments, which are compounded by formulation.

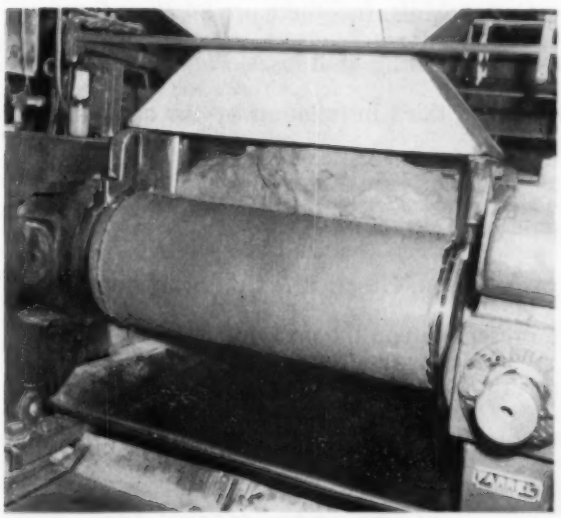
How Coatings Are Made

Coating compounds must be formulated to work with the coating method to be used. Calender coating requires a dry compound, whereas knife or roller coatings employ a viscous-type compound in a solution called organosol or plastisol, depending on its viscosity.

Federal defines an organosol formulation as one that carries a large degree of solids with volatile matter. The plastisol resins have almost no volatile matter when originally mixed.

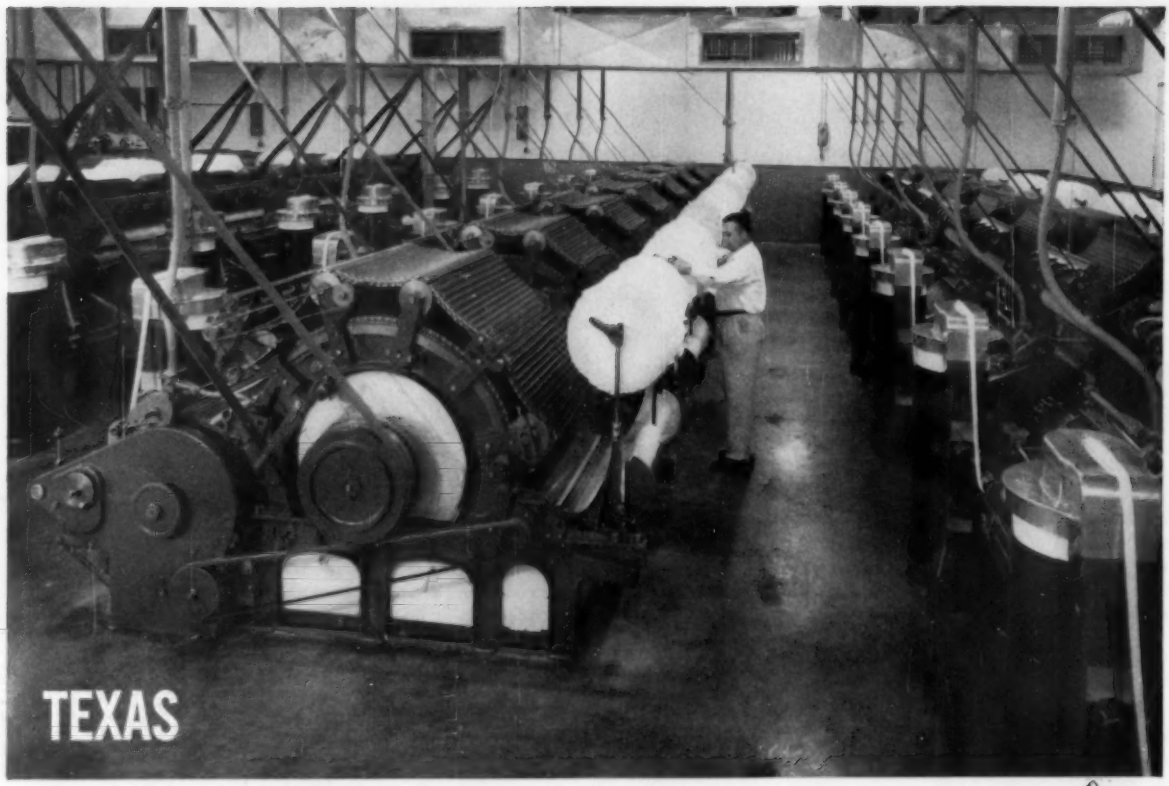
Both the organosols and plastisols are actually dispersions of resins and additives in organic liquids. To get a stable dispersion at the desired viscosity, the coating to be used requires a carefully balanced formula that includes just the right amount of polar liquid, a dispersant, with a nonpolar liquid, a diluent.

The calender compound is in a loose-solid state. Initial mixing of this compound is done in a blender. Care is exercised not only in weighing the right proportions of resins and other

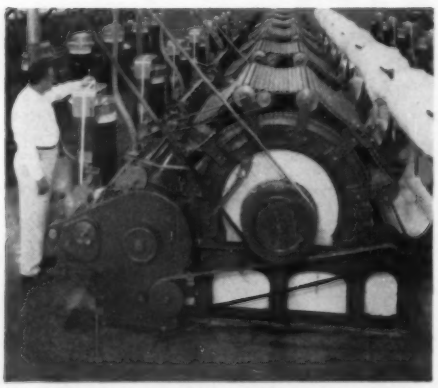


TWO-ROLL MILL takes the mix from the Banbury above and converts it into a smooth plastic sheet. After thorough mixing, the sheet is cut off and placed on the upper nip of the calenders, where it will be applied to backing or be run out as unsupported film.

PRINTING an all-over pigmented lacquer is done directly from a smooth roll in this instance. Other types of printing resemble rotogravure work when color is furnished to the engraved roll by a roll running in the color. Fires are prevented by automatic equipment.



PLATT CARDS as far as the eye can see...



Platt Cards are solidly built to *close tolerances*. They take and *hold* accurate settings at all work speeds, producing even nepless webs.

At the Postex Cotton Mills, Inc. there are 84 *Platt Cards* running. This fine sheeting mill uses *Platt Cards* exclusively. This is the third installation by the company.

Many cost-conscious mills are discovering the mechanical perfection of Platt machinery and the prompt, personalized service of Atkinson, Haserick & Co. throughout the U.S. May we present to you the cost and quality advantages inherent in machinery made by the *world's largest manufacturer of textile machinery?*

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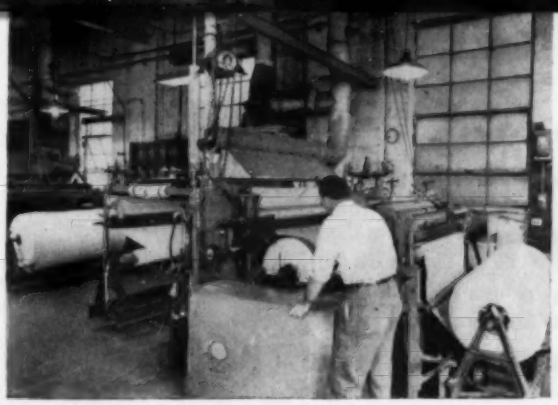
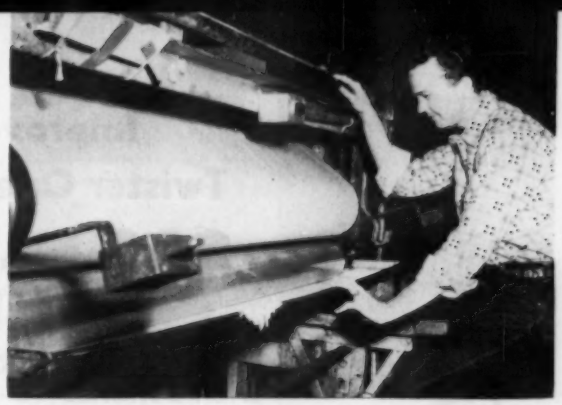


EMBOSSING CALENDERS impress the design of an engraved roll (arrow) on the heated goods. Embossing is also done on plate-embossing machines, but the engraved-roll method is faster and shows no repeat marks. Pressures are automatically regulated.



FINISHING is the final operation and consists of applying a coat of clear or pigmented lacquer to the surface of the goods. By this means luster can be varied to suit the end use, and further decoration and surface protection are provided.

elements but also in calculating the anticipated production requirements.

From the blender the compound is further mixed in a Banbury where powerful rams and heat are used to mix the ingredients into a homogeneous plastic mass. The mass is further kneaded and mixed on a mill prior to application at the calender.

How Coatings Are Applied

Knife coating is the simplest method of applying the viscous-type compound. Essentially, the backing fabric is drawn under tension beneath a blunt-edge knife in front of which the liquid coating is poured. As the cloth passes beneath the knife, it picks up a coating of plastic. The coated goods then pass into an oven where the finely dispersed resin fuses into a homogeneous mass.

Time, as well as temperature, is carefully watched to produce optimum results. The coating thickness in Federal's operations is monitored by beta-ray gauges. By this means, uniform results are assured and accurate predictions of the amount of mix necessary to produce a given yardage of goods are possible.

Roller coating, as the name implies, is done by passing the goods over a roll charged with a predetermined amount of fluid coating material. The operation is similar to offset printing in that the actual coating roll is furnished from another roll that revolves in the liquid coating compound.

Calender coating is relatively fast and is capable of producing heavily coated fabrics; but the equipment is costly to purchase and maintain, as is most of the equipment used in this processing.

At Federal, the calender compound is placed in the nip between two steel rolls at the top of the calender. These rolls are mounted side by side and two more rolls are mounted below one of the top rolls to give an inverted L-shape to the setup.

There is provision for close control of the nip between the rolls carrying the mass of resin and the rolls through which the film passes. A beta-ray gauge is also used on calender production to insure uniformity of calender sheet. The fabric and film are welded together at the roll nip by heat and pressure.

The coating operation marks the midway point in the fabricating of a fabric-backed plastic material. Following the application of vinyl plastic to the base fabric, the coated fabric is ready for printing, embossing, and the finishing operation.

Designs Follow Trends

Contemporary tastes lean toward the 3-D effects. Federal's designers strive to create in their wall coverings designs that are rich in texture. Straw and other grasses, geometric designs, and woven fabrics of all kinds are reproduced not only in visual characteristics but also in actual dimensions. These surface effects are created by putting the coated fabric through an embossing calender. Federal is equipped with both plate- and roll-embossing machines.

Originally, embossed effects were reproduced entirely on plate-embossing presses that impressed the pattern of the engraved plate on the coating by means of heat and pressure. This method is discontinuous and leaves a slight repeat mark. Plate embossing is still widely used, but roller-embossing equipment is rapidly increasing in use even though the roller-type units are much more expensive than similar plate-engraving units.

In a roller-embossing calender, the goods pass through the nip at several tons' pressure. The pattern is pressed into the vinyl as it passes between the engraved roll and the roller bed, and a reverse design of the engraved pattern on the embossing roll is impressed on the plastic.

Printing Heightens Effects

Decorative effects that produce several color variations based on one pigment base are produced by printing. When printing is required, it usually precedes embossing as a separate operation.

Printing of vinyl film is similar to rotogravure printing. The pigment and metallic inks are transferred to the cloth by an ink-saturated material roller. The medium used to carry the color must be compatible with vinyl and is compounded to get actual penetration of color into the vinyl film. The result is a noncrocking durable design.

Some materials are given a finishing coat as a final operation. Such a coating protects the over-all pattern and can be formulated to produce a sheen or dullness, whichever is required for the end product.

Formulations and finishes vary greatly because of the multitude of uses to which vinyl-coated fabrics are put.

Federal's major outlet is the automotive field, which requires a coating with a scuffproof surface resistant to oil and water and one that resists extremes of temperature and doesn't support combustion.

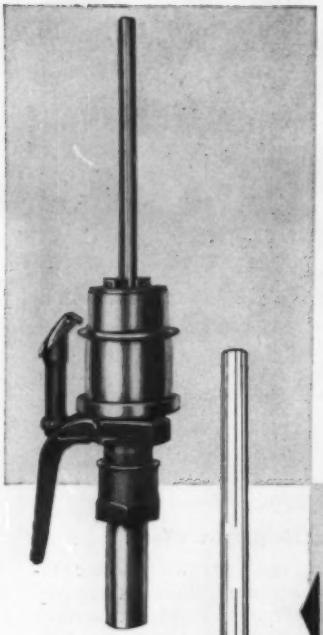
Shoe, handbag, and some luggage requirements call for a more-pliable product. Almost any degree of thickness, pliability, flame resistance, or other desirable characteristics can be produced by modifying the basic formulations either proportionwise or by changing plasticizer, extenders, lubricants, and dispersants.

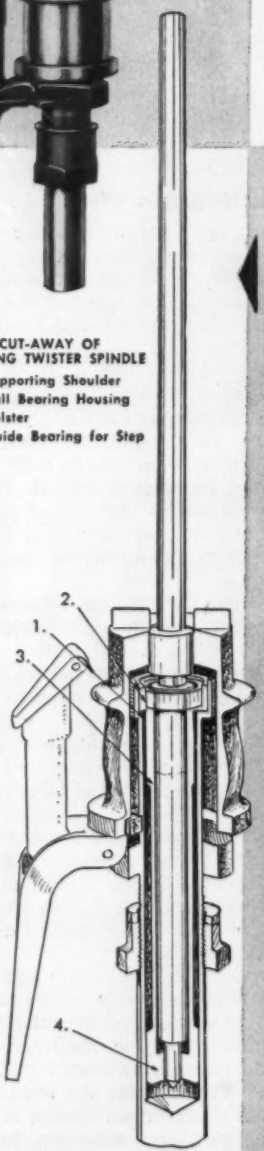
Wall coverings of vinyl plastic are growing in popularity for public buildings and hard-usage areas in homes. The extra cost compared with paper is balanced out by washability and long life.

Improve your Twister Operation with SACO-LOWELL SPINDLES

A SIZE AND TYPE FOR ALL CONDITIONS, EACH DESIGNED TO—

- CARRY LOADS AT HIGH SPEED.
- RESIST INCREASED RADIAL THRUST AND UNBALANCED LOADINGS.
- OPERATE FOR LONG PERIODS WITHOUT REPAIRS AND REPLACEMENTS.





CUT-AWAY OF BEARING TWISTER SPINDLE
1. Supporting Shoulder
2. Ball Bearing Housing
3. Bolster
4. Guide Bearing for Step

SACO-LOWELL BALL BEARING SPINDLES

The Saco-Lowell ball bearing spindle is fitted with a precision ball bearing designed to receive both radial and thrust loads. A special type bolster is supported by an accurately machined shoulder. Oil is circulated through oil slots in the bolster for the dual purpose of lubrication and as a dampening agent. A bearing at the foot of the bolster acts as a steady rest, but carries no thrust load.

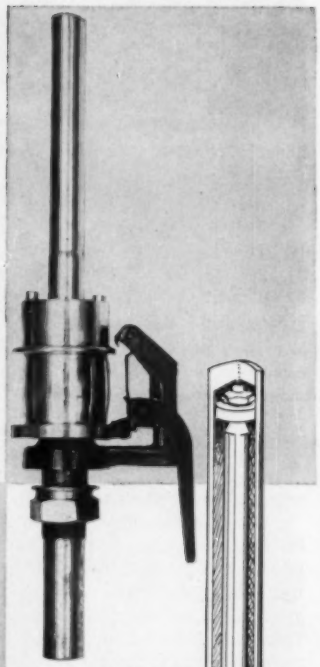
SACO-LOWELL NEW ERA SPINDLES

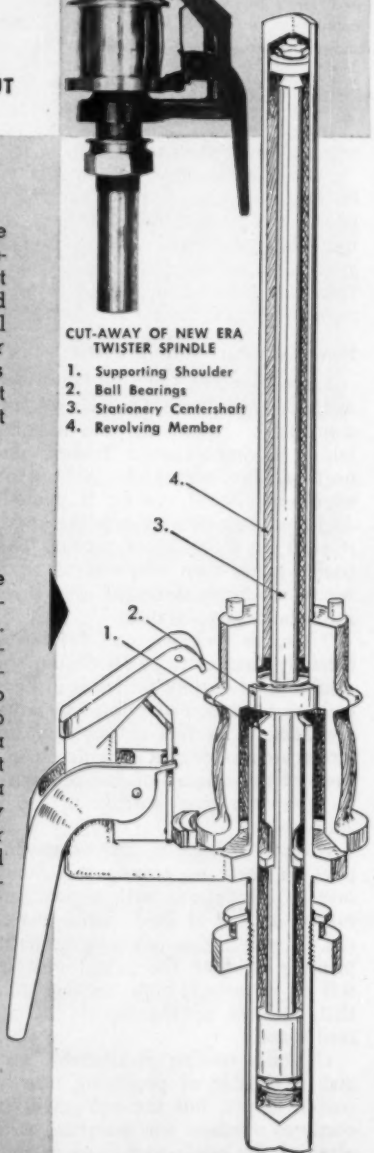
New Era Spindles have at least twice the loading carrying ability of their conventional counterparts. The No. 2 and No. 5 oil-cushioned spindles, for use on existing twisters, are mounted in a standard-type base. The base is filled with oil to act as a damper and cushion to absorb vibrations. All Saco-Lowell New Era Spindles are equipped with efficient brakes. New Era Twister Spindles effect a considerable saving in power, generally from 25% to 30%. They are much cleaner and do not cause oil stained or smudged yarn and the tapes last longer. Maintenance costs are substantially reduced.

Also Available:

FEASTER SPINDLES with specially designed bolster spring, which, with the ball and socket bearing, allows spindle to find its true axis of rotation while absorbing internal shocks and stresses.

PLAIN BEARING SPINDLES—an economical replacement where speeds and loads are not excessive.





CUT-AWAY OF NEW ERA TWISTER SPINDLE
1. Supporting Shoulder
2. Ball Bearings
3. Stationery Centershaft
4. Revolving Member

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Does Your Department Meet These Tests of Good Organization?

A good football team doesn't just happen. Neither does a smoothly running department in a textile mill. In fact, a lot of the same kind of planning, organizing, and managing go into both operations.

Here's a look at some of the things a well-run team and a well-run department have in common.

By **M. A. CROSS,** Director of Industrial Relations, Dan River Mills, Inc.

A good football team in action—well-coached but run by the quarterback on the field, not the coach on the sidelines—has been described as the ultimate in organization. It represents effective organization because everybody knows his job, everybody knows what the other members of the team are doing, and everybody is striving for a single goal.

Let's take a few minutes to analyze what makes a good football team tick and see how it offers some suggestions for effective organization within our own departments in a textile mill.

1. Jobs Are Well Defined

On a football team, each of the 11 players has a clear-cut assignment on each play. He is drilled on which opponent he is to block, how to block him, and what path to follow in knocking the secondary defense out of the play after it moves beyond the scrimmage line.

The player doesn't hear once what he is assigned to do; on the contrary, he practices his own assignment time and time again until it becomes second nature. When he meets the actual test in Saturday's game, he knows his job, it is well-defined, it is spelled out. If he does his job right and the other members of the team do their jobs right—if every man carries out his assignment—a touchdown results.

In your own department, are the jobs well-defined? Does each person know exactly what he is supposed to do? Do you coach each subordinate on his assigned task? Do you give each employee the necessary training to learn the proper motions, to understand how one step logically follows another? Do your employees know when to move from one task in their assignment to the next one without direct instruction?

Finally, are their duties and responsibilities clear beyond question so that, having been properly trained, they can go about their business with the sure knowledge they know what they are expected to do?

2. The Relationship to Others Must Be Clear

In football, on each offensive play the backs have certain prescribed paths to follow. In one instance, they may move ahead of the ball carrier to provide blocking; in another, they may fake to throw the defensive team off balance, if only for a second.

Likewise, on a pass play the potential receivers go down field on a set pattern designed to confuse the defensive asignments and set at least one man free to receive the pass. The line men, too, have prescribed arrangements in order to protect the passer; and some may pull back to form a protective cup behind which the passer can maneuver until a receiver gets in the clear.

No member of the team is acting independently. Every line man and every back knows that his assignment bears a certain relationship to the assignment of his team members and that if one man fails, it places an extra burden on the others and decreases the chance for success.

In your own department, no less than on the football field, the members of your team must understand the relationship of their work to that performed by others. In a weave room, for example, effective performance depends on the interrelationship of a number of people with a multitude of varied tasks that must tie together in an orderly fashion.

Let the cloth doffer, the tying-in-machine operator, the smash hand, the weaver, the loomfixer, or the batteryhand fail to understand the relationship of his work to that of others, let him fall down on his assignment because of this failure to appreciate the importance of that relationship, and the whole job will suffer.

The same thing is true in other departments. Relationships between the assignments of various workers must be clear. As supervisor, it is your responsibility to assure that they are.

3. The Lines of Authority Must Be Clear

Returning to the football team again, when the team members gather in the huddle, one man calls the play. He generally is not the biggest man on the team, he may not be the smartest, he undoubtedly makes mistakes; but he is the only one with the authority to call the plays.

In the huddle there is no time for a conference, no time for argument and debate, no time to refer a problem to higher authority. The decision must be made then and quickly, and it must be and is accepted by other members of the team. They know beyond question that the man assigned to call the plays has the authority. To them, the line of authority is clear.

In your own department, the lines of authority must also be clear. Each worker must know to whom he is responsible, to whom he should look for instruction, whom to approach when he requires a decision.

CONTINUED ON PAGE 115

SPRINGS COTTON MILLS slasher order in textile

● **LANCASTER, S. C.—**
14 West Point 9-Cylinder slashers provide slashing capacity for 9,000 looms!

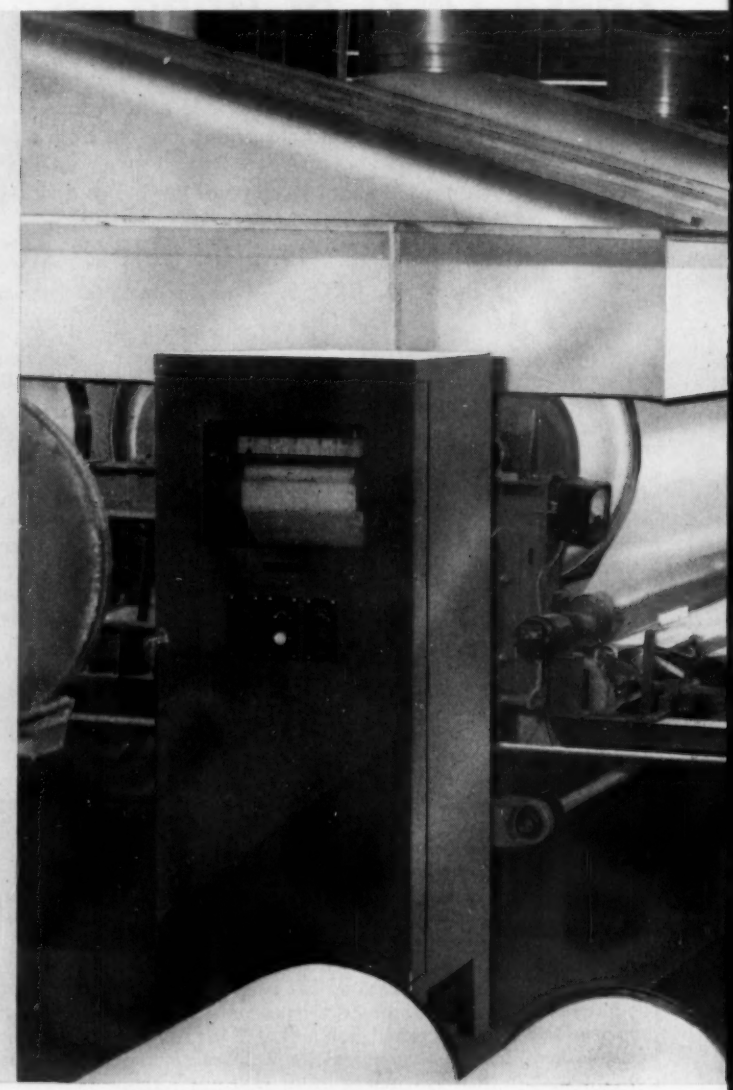
● **FORT MILL, S. C.—**
Four West Point 11-Cylinder giants are each slashing 1850 to 2050 pounds of warp per hour!

● **KERSHAW, S. C.—**
Three West Point 9-Cylinder slashers provide drying speeds of about 125 yards per minute.

● **SPRINGSTEEN, CHESTER, S. C.—**
One West Point 9-Cylinder slasher replaced *two* 3-Cylinder slashers!

● **GAYLE, CHESTER, S. C.—**
Three West Point 9-Cylinder slashers complete this 100% West Point installation in all five Springs Cotton Mills.

A production capacity that could only be equalled by 40 old-style slashers!



West Point Slashers provide *higher* drying rates, *better* warps

Anticipating the addition of 1800 looms, Springs Cotton Mills looked at slashers with an eye toward increasing slasher room capacity. The solution was found in what became the world's largest slasher order. Twenty-five West Point Foundry Multi-Cylinder slashers replaced 32 old-style slashers and still provided the extra capacity required for those 1800 additional looms! In addition to increasing drying rates and maintaining high quality, these West Point slashers are extremely versatile, capable of handling cotton, spun or filament synthetics. Multi-motor drives mean smooth acceleration and deceleration, constant

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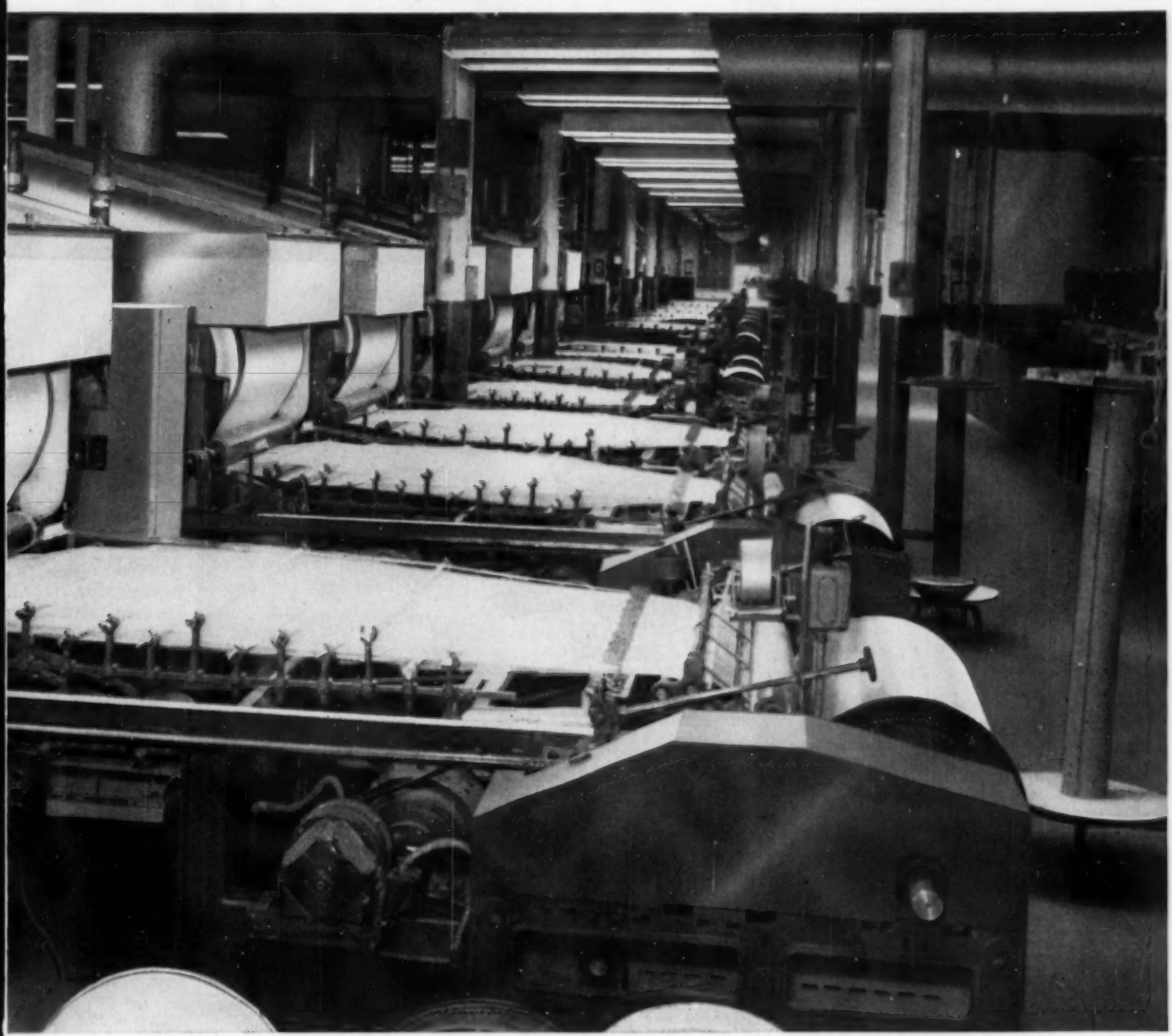
25 West Point Foundry Multi-Cylinder Slashers now provide more warp for 5 Springs mills



and accurate control of yarn tension, *fewer* loom stops. Coupled with the higher capacity of West Point Foundry Multi-Cylinder slashers, they more than answer highest production and quality requirements. Whether yours is a complete slasher installation or modernization of present equipment, call West Point Foundry . . . specialists in slashers.

WEST POINT Foundry & Machine Company

WEST POINT, GEORGIA

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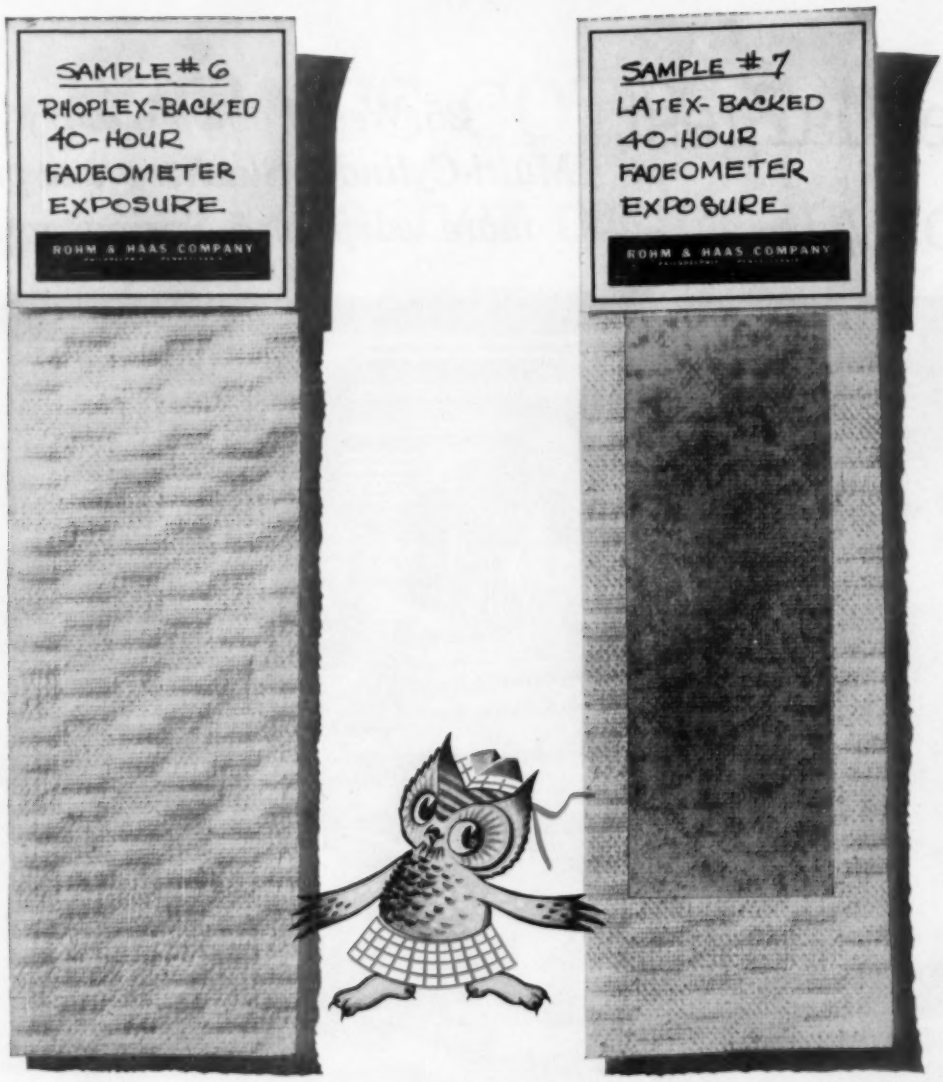

Which fabric has the RHOPLEX backing?

Even 40 hours in a Fade-O-meter couldn't discolor or stiffen the backing of the automotive upholstery fabric sample at left. It's made with RHOPLEX resin! But the latex backing on the other sample became badly discolored and brittle after the same exposure to heat and light.

That's why RHOPLEX backing resins are being used more and more on automotive and furniture upholstery, carpets, and non-woven fabrics. The acrylic film not only resists aging, but also provides excellent bonding and curbs unraveling. And unlike latex, RHOPLEX backings need no curing.
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POINTERS FOR SUPERVISORS

CONTINUED FROM PAGE 111

If your workers are exposed to a crossfire of instructions, changed and countermanded orders, and conflicting assignments, they are going to be handicapped in doing an efficient job and are less than human if they don't experience a degree of frustration and resentment. You like to know the lines of authority over you. Make sure the lines of authority are clear to the people under you.

4. There Must Be Goals To Strive For

For a football team, the goal is clear. The single objective is to score more points than the opposing team; in short, to win. All the practice, all the training, all the grinding repetition of blocking, tackling, and running through plays is designed to accomplish that objective. With that goal before them, the members of the team will strive mightily to reach it; and the reaching is reward in itself.

On the job, goals may not be quite so easy to define; yet for the worker, as for the football player, good organization requires that he has a goal toward which to strive.

It will be helpful in your own department if each employee has a clearly understood objective; has a standard stated in measurable terms such as units to be produced, cost per unit, or waste of material; knows that his performance in relation to standard will be examined periodically by his superiors; and ideally, that if he exceeds the standard, he will be rewarded.

If the reward can be in money, that's fine, but it doesn't have to be. There are many people who respond to rewards other than those that appear in the pay envelope.

5. There Must Be Flexibility

A winning football team must be flexible enough to shift strategy and tactics when the occasion calls for it. Even with the best planning backed up by detailed scouting reports on the opposing team, there is no assurance that the plans determined in advance of the game are adequate to the situation.

As the game progresses, assignments may have to be switched and play patterns revised to meet changing defensive assignments of the opponent. A good team takes these adjustments in stride.

So too in your department. Your best-laid plans may not suit a problem that develops in an unexpected direction. If your planning is inflexible, you have made yourself a strait jacket.

If your planning is flexible, you can shift responsibilities, shift relationships, keep your lines of authority clear, and keep the goals clearly in mind. Keeping a flexible organization requires an occasional stock-taking, making a review to see how things are going, where your organization is weak, what needs bolstering.

It is well worth the time and the effort because good organization is not fixed, unchanging, and static; it is flexible, changing, and dynamic.

INSPECTING COTTON PLY YARN

CONTINUED FROM PAGE 97

different numbers and types of ply yarn places only one number or style on each arm of the storage posts. Certain arms are assigned to each inspector so that he can become a specialist and increase his efficiency.

Reel operators should be instructed to tie a colored thread on the skeins that have outstanding defects. The thread tells the inspector immediately which skein contains a serious fault.

Examine Each Inspector's Work

Where the inspection section is small, the chief inspector should examine a portion of one examiner's finished work each day to see if any faulty work has been overlooked. In a large department, inspected material from more than one worker should be examined; and each inspector should be checked on at least once a week. One regular inspector should be assigned for reinspection duty.

Reinspection keeps the inspectors on the alert. And an alert inspection department can keep complaints from customers to a minimum, which may be the difference between success and failure of the mill.

YARN-IRREGULARITY TESTS

CONTINUED FROM PAGE 105

sponds roughly with the 10% point of the "t" distribution 1.83, which means that differences as large as that observed could be obtained once in 10 times from samples drawn from the same parent population.

If the calculated value of "t" had been larger, say between 2.26 and 3.25, the difference between means would have been regarded as probably significant; and if it had been greater than 3.25, it would be called significant.

Here's an example of a "t" test for two means:

Evenness tests taken before and after a change in ratch setting on a spinning frame give the following results:

	Before	After
Percentage mean deviation	$\bar{x}_1 = 12.0\%$	$\bar{x}_2 = 11.4\%$
Sample standard deviation	$s_1 = 0.9$	$s_2 = 1.2$
Number of tests	$n_1 = 20$	$n_2 = 10$

Improved Evenness Is Shown

We want to know if the adjustment has improved yarn evenness. For a "t" test with two means, first calculate a pooled estimate of the assumed common population variance from the formula—

$$\text{Variance} = \frac{n_1 s_1^2 + n_2 s_2^2}{n_1 + n_2 - 2}$$

$$= \frac{20 \times 0.9^2 + 10 \times 1.2^2}{(20 + 10) - 2}$$

$$= \frac{16.2 + 14.4}{28} = 1.1$$

The best estimate of the standard deviation is the square root of the variance $= \sqrt{1.1} = 1.05$

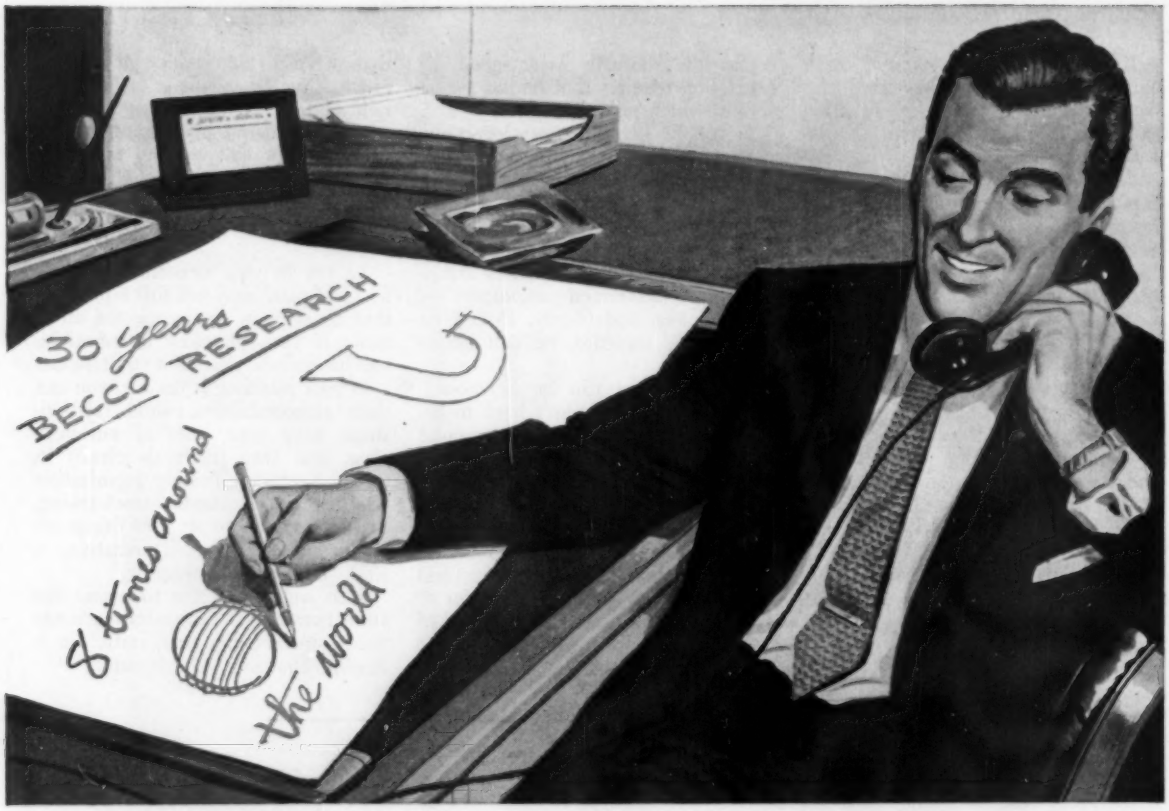
$$t = \frac{12.0 - 11.4}{1.05\sqrt{\frac{1}{20} + \frac{1}{10}}}$$

$$= \frac{0.6 \times \sqrt{20}}{1.05\sqrt{3}}$$

$$= \frac{2.68}{1.82} = 1.47$$

The degrees of freedom are $n_1 + n_2 - 2$ ($v = 28$ degrees of freedom)

Again checking in the "t" table with $v = 28$, the 5% point value is 2.05. This figure is greater than the 1.47 calculated; therefore from the evidence available, the difference between means cannot be regarded as significant.



Heard the latest report on Becco Service?

Eight times around the world Becco Engineers travelled from plant and laboratory during the past year providing free technical service to Becco customers. Laboratory and pilot plant work have been done at Becco's plant in Buffalo for 164 additional mill customers. Becco has also given free consulting service to many other mills.

For more than 30 years Becco research has been applied to expanding the usefulness of peroxygen chemicals to American industry.

Becco pioneered in the application of hydrogen peroxide to the textile industry... developed and perfected the Becco type J-box, now dominant in the industry, with 70% more installations than any other.

Among other Becco developments are the Wet J-Box, Non-silicate bleaching, Flash bleaching, 15-minute bleaching and Single-Stage bleaching, each with its specific area of application to mill or bleachery needs. For information on any of these Becco developments, consult trained Becco field engineers or write and we shall arrange for a representative to call at your plant.

BECCO CHEMICAL DIVISION
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REDUCED FLAT SPEED

CONTINUED FROM PAGE 77

strips carded at the lower flat speed. On the other hand, trash in the card web was almost the same at both speeds.

About half of the tests showed that the lower speed produced less trash in the web. Average difference was less than 0.5% in favor of the higher speed. There was no difference in the quality of the web or sliver.

Tests Are Summarized

A summary of findings for the entire series of tests follows:

1. An almost linear relation exists between the average weight of strips and flat speed, subject to variation of the raw material.

2. The flats that stay longest in the carding zone after stripping load the least; before stripping, they load the most.

3. No consistent relation between average loading and speed of flats was proved.

4. Reduced flat speed causes increased neps in the web, but faster lickerin speed tends to offset the nep build-up.

5. Fiber length decreases slightly at lower flat speeds because of the longer duration of the flat passage.

6. Trash in the strips is less at lower flat speeds, and trash in the web and sliver remain the same.

BOILER-TUBE MAINTENANCE

CONTINUED FROM PAGE 95

tube composed from an alloy that suits the particular conditions. The inserts come in outside diameters of ⅝ to 1¼ ins.

Tools for Tube Replacement

Sometimes it is necessary to replace the tubes. Modern tube replacement requires more than the expander, chisel, and set of hand tools used to retube fire-tube boilers years ago. The first step in retubing condensers or other heat exchangers is removal of the head. It is often necessary to brush the face of the tube sheet clear of scale or other matter that might impede tube removal. Heavy-duty brushes and adapters driven by an air drill are available to do this job.

Tube removal is next. There are two basic types of tube-removal tools: (1) the internal tube cutter, used only for cutting tubes just back of the tube sheet to free it from the tube bundle, and (2) the wall-reducing tool, a special piloted type of drill that relieves pressure at the joint by removing most of the tube wall.

Tube Cutter Removes Old Tubes

The internal tube cutter is used only when the tube bundle is not secured in the shell, as in units where the tube sheets are welded to the shell. In such units, the wall-reducing tool relieves the pressure at the tube joints and allows the tubes to be removed through their own holes. A tube knockout tool with the same dimensions as the wall-reducing tool drives the tube ahead about 6 ins. and allows it to be pulled from its hole. When a tube cutter is used, the tube ends remaining in the tube sheet are removed in a similar way.

If the old tube sheets are to go into the retubed unit, clean all tube holes thoroughly to free them from rust, scale, and oil. Expanding brushes are ideal for this function. If new tube sheets are used, standard drills are satisfactory for making the holes. But reaming these tube holes from 0.005 to 0.010 ins. over the tube diameter requires reamers of special sizes not available as standard machine tools.

Grooving Tool Cuts Anchors

A grooving tool is used to cut helical anchoring grooves into the tube hole after it is reamed. The tool operates like a tap with a pilot but is run only approximately ¾ in. through the tube-sheet thickness.

After the tubes have been cut to the exact length, allowing for approximately a ☆-in. projection beyond each tube sheet, the tube ends are rounded off. A simple tube-end radius-facing tool produces a fine radius at the inner and outer ends of each tube. The tool can be used in any portable drill, and a quick application at the tube end completes the operation.

Next it is necessary to feed each tube through the tube-sheet hole and the supporting baffles and guide it out of the hole in the far tube sheet. A simple pilot or guide inserted into the tube end before it goes into the unit protects the finely finished tube end and facilitates passage through the unit.

Tube Expander Rolls Tube Ends

The next operation is tube rolling or expanding. Tube expanding is basically the cold working of the tube end to form a tight frictional joint. The job is done with an expander, a tool that fits into the end of the tube and enlarges it to make the outside of the tube fit flush against the tube-sheet hole.

The most common type of expander has three rolls mounted in a cylindrical cage or body through three longitudinal slots. The slots hold the rolls loosely and allow them to move outward or inward. A free-moving pin or tapered mandrel fits through the center of the cage and bears against the rolls.

When the expander is inserted into the tube end, the rotating tapered mandrel forces the rolls outward and the rolls and the mandrel both start turning. The automatic forward travel of the mandrel combined with the rotating action rolls the tube slowly and smoothly. By ironing out and enlarging the tube, the expander finally enlarges the tube to make it fit tight against its mating part, commonly known as the tube seat.

New Expander Is Automatic

Expanding is a precise operation. The tube joint should be neither over-rolled nor under-rolled; yet it should be able to withstand designed operating pressures. Under-rolling causes a loose joint, and over-rolling may cause the joint to work-harden and ultimately fail in service.

Several methods are available to control the degree of expansion: manual feel of the resistance to torque through the expander mandrel and electronic, frictional-magnetic, and mechanical torque controls either powered by air or electric motors.

One recently developed control is an air-powered, single-unit, mechanical device that measures torque directly at the mandrel and automatically stops the rotation of the expander at a preselected torque setting. The torque setting may be adjusted by regulating a dial calibrated in foot-pound torque. This type of control assures uniformity of expansion regardless of tube-hole or tube-wall variation.

After the tubes have been ex-

CONTINUED ON PAGE 152

MORE THAN THE LUBRICATION LEADER . . .

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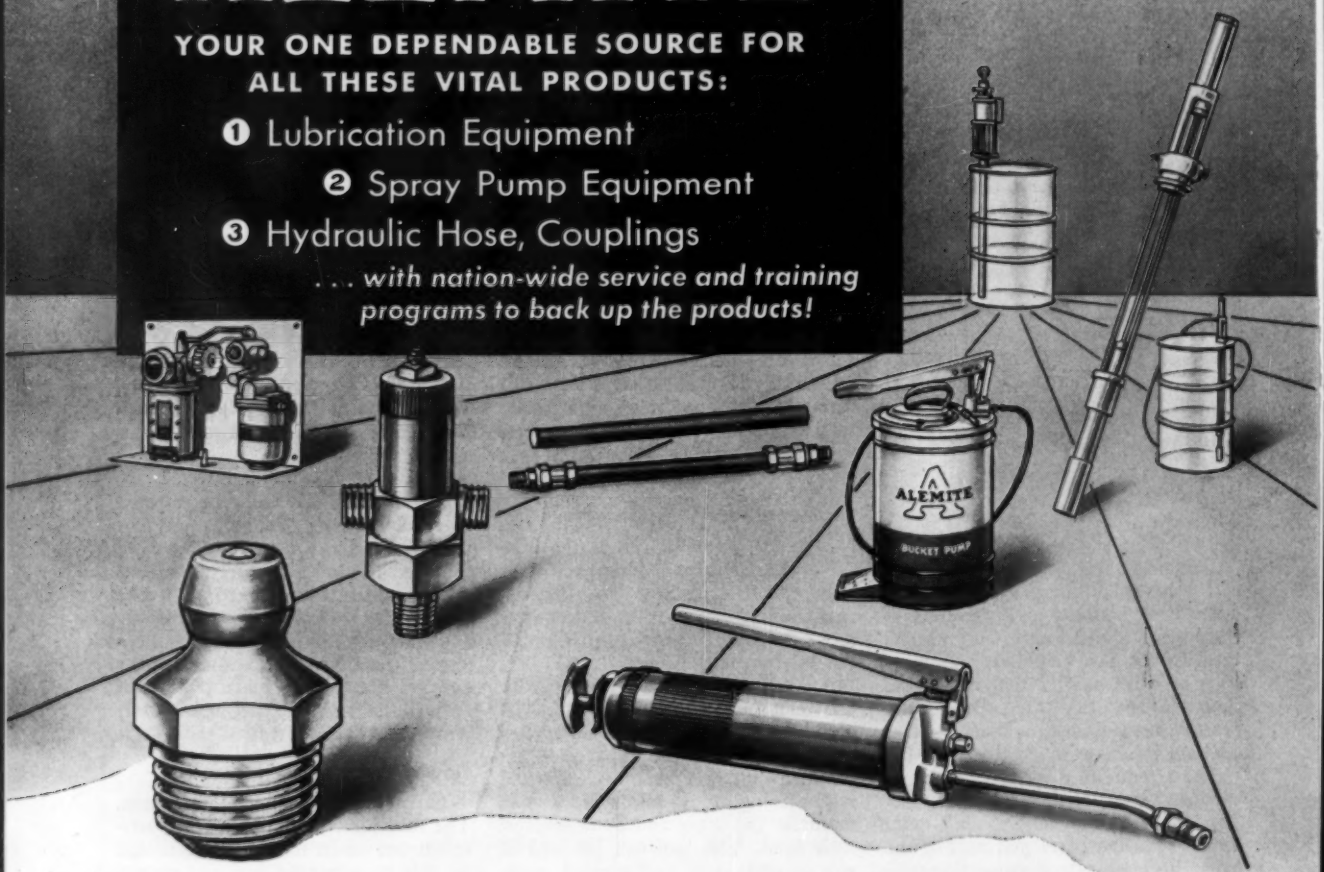

Cut Lubrication Costs up to 64%! Alemite offers the widest choice of lubrication fittings on the market—time-saving pumps and guns for handling of lubricants—fully automatic airborne mist lubrications systems—centralized systems for both oil and grease.

Apply Materials 30% Faster!—If you use any material that is received in a drum—paint, putty, caulking, even food products . . . Alemite can pump direct from the drum to point of application for spraying, extruding, transfering, packaging!

Protect Hydraulic Systems!—Alemite offers a complete line of non-skive, reusable high pressure hose and couplings for *any* hydraulic system.

And Alemite backs up these products with service points from coast to coast—with free training programs and plant surveys that will save money for *your* company!

For free catalogs and complete information, write Alemite, Dept. X-87, 1850 Diversey Parkway, Chicago 14, Ill.

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Alemite is the only *single source* for all these famous products:

OIL-MIST	Automatic Airborne Lubrication System
Centralized Lubrication Systems	Accumatic
red•ball	Hydraulic Lubrication Fittings
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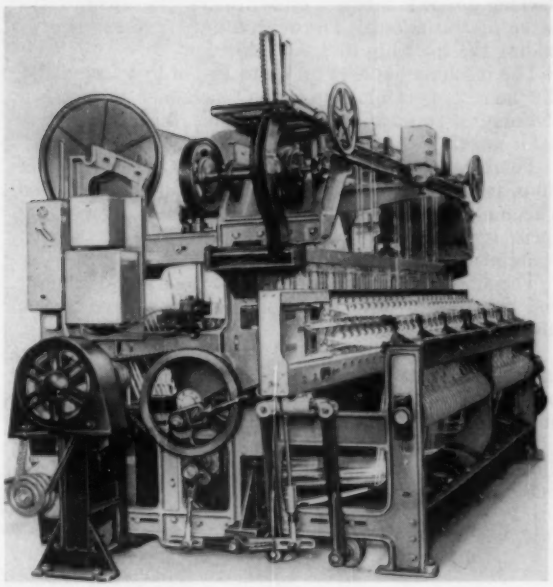
"BARREL-TO-BEARING"	Manual and Power Operated Pumps and Guns
Spray Pump Equipment	ALEMITE Versatal
SURGEPRUF	Hydraulic Hose and Couplings



Narrow-Fabric Looms

All its looms will be made in a standard 9-ft. size except on special order, according to Fletcher Works, Inc., Glenwood Ave. and Second St., Philadelphia, Pa. By standardization of its narrow-fabric looms and parts, Fletcher offers weavers these advantages: (1) standardization of maintenance, (2) reduced cost of housekeeping and maintenance, and (3) a reduction in parts inventories.

Many of the standard loom parts have also been designed for use on special-length looms.

Circle T-1 on Reader-Service Card

Fiber-Fineness Indicator

A desk-size unit, EFFI, that scans the diameters of fibers on a sample slide and computes the average diameter of the sample, has been announced by National Research Corp., 70 Memorial Drive, Cambridge 42, Mass. The percentages of fibers with diameters within selected distribution groups are also given.

The operation is automatic, and answers appear on direct-reading counters. An accurate 1,000-fiber determination can be made in about 5 mins. The machine can be operated by a semiskilled technician after a week's training.

The unit will accurately measure the diameters of all wool fibers normally used in apparel. The range includes fibers with diameters from less than 10 to more than 40 microns. In terms of grades, the range includes 80s through 36s.

To make a fiber determination, a group of several thousand fibers is cut from wool-top sliver to a length of about 200 microns. These cuttings are laid parallel on a microscope slide that is inserted in the optical system of the EFFI grader. The operator presses a button to start the machine, and the operator is free to prepare the next slide.

The slide passes through a beam of light; and after each pass, the slide is mechanically indexed to bring new fibers into the beam. This motion is repeated until a count of 1,000 has been completed, and the machine stops automatically.

Each fiber's image is magnified and presented to a photomultiplier tube that produces an electrical signal when the leading edge of the fiber is seen by the tube.

The output signal from the tube continues until the trailing edge of the fiber has passed. The duration of the signal is a measure of the diameter of that fiber.

The signal from the photomultiplier tube is passed to a counting circuit. An averaging circuit remembers the time interval each fiber is in the light beam so that when the 1,000th fiber has passed the slit, a direct measure is available of the average of the 1,000 diameters.

Circle T-2 on Reader-Service Card

Hosiery Examining Form

An examining form for seamless hosiery, developed by Textile Machine Works, Reading, Pa., can be used for stacking dozen lots into a carrier under the machine with an automatic release. The release can be disengaged for folding the stockings by hand into bags.

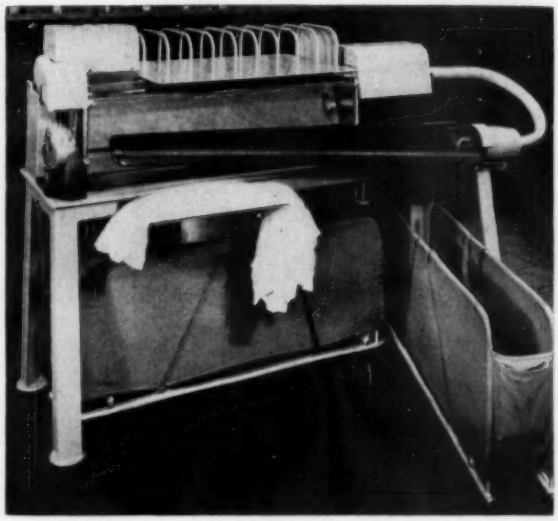
The machine has a 48-in. board length to accommodate the longest stocking. Operation, including turning and stacking, is automatic. The electronic control uses transistor units.

There is a self-contained vacuum unit. No air connections are required. A 110-v. electrical outlet is provided. Vacuum is applied only during the removal cycle, and there is no vacuum interference while the stocking is being placed on the form.

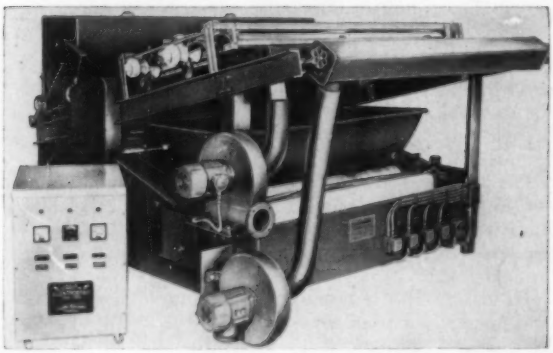
The stockings are released to the carrier in 1-doz. units, and the controls can be set to produce a buzzer signal instead of releasing stockings to the carrier.

The stocking counter has a 10-doz. capacity. The dozen-indicator disk may be set to lock automatically at any point between 1 and 10. The vacuum cycle can be halted at any time by a simple foot-operated switch.

The minimum floor space required for the form is 70x51 ins., or 25 sq. ft. This space includes operator space but not aisle space between the units.



Circle T-3 on Reader-Service Card



Flocking Machine

A flocking unit that is designed to be used in conjunction with a roller-printing machine has been produced by Camillo Reisinger, Reutlingen, Germany.

Flock is deposited electrostatically on the areas printed with adhesive. Thin fabrics may be printed on a conventional printing machine; thick fabrics require a duplex machine to put the adhesive on both sides.

Surplus flock is returned to the oscillating screen, and flocked goods pass through a steam-heated dryer after a precleaning treatment with a blast of air.

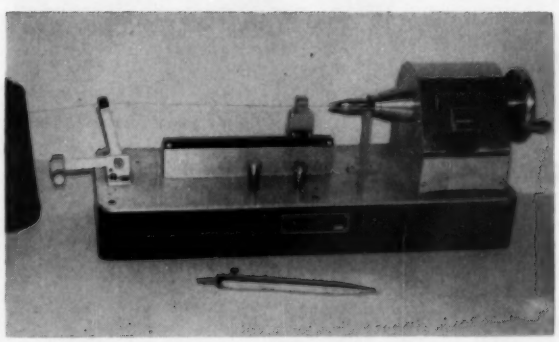
Circle T-4 on Reader-Service Card

Singles Twist Tester

A singles twist counter has been marketed by United States Testing Co., Inc., 1415 Park Ave., Hoboken, N. J.

The instrument covers the 0- to 5-in. range and operates on the direct-removal principle as opposed to the untwist-retwist system.

The yarn to be tested is precisely tensioned in the desired length and then is gripped firmly by the adjustable chuck and the rotating chuck. The handwheel is turned in the direction for twist removal, and results are read in number of turns per specimen length. A pick needle and low-magnification lens aid in determining when all twist is removed.



Circle T-5 on Reader-Service Card

WHERE *Flexibility* COUNTS . . .

FOSTER MODEL *102*

Yes, you've got to give the palm to Foster 102 for its flexibility in performance and product. And here's why . . .

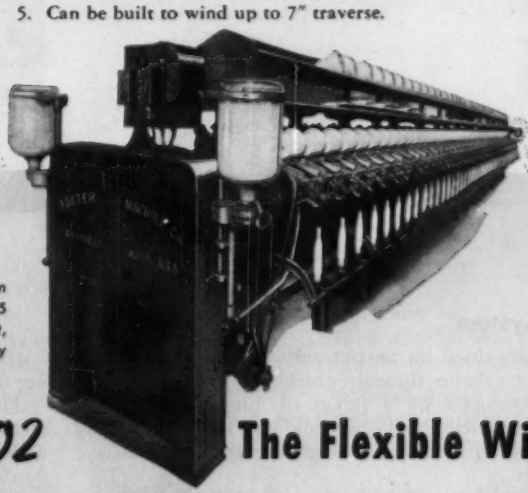
One-fibre specialization in the textile industry has gone the way of the one-horse shay. Monogamous mill marriages to cotton, wool or worsted have been broken up. Cotton mills are now running worsted or blended yarns, while woolen and worsted mills are producing blends of many different fibres, both natural and synthetic.

This trend to versatility and multiple operation extends to the choice of modern winding equipment. Only a winder that can meet TOMORROW'S requirements, as well as TODAY'S, for types and counts of staple yarns can keep you abreast of competition in the present dynamic market. In addition to its other qualifications, Foster Model 102 is the only winder of its type which has this proven flexibility.

FLEXIBILITY FEATURES OF THE FOSTER *102*:

1. Winds any type or count of staple yarn. The same type of traverse mechanism which handles cotton yarn will handle worsted yarn without excessive wear. The change-over is quickly and easily made.
2. Produces any cone taper commonly used and any angle of wind from 9° to 18°.
3. Can be equipped to wind knitting cones, warping cones, parallel tubes, dye packages or short traverse cheeses. Winds cones on one side of machine and tubes on the other, if desired.
4. Winds dyed yarn even when damp; also conditioned yarn.
5. Can be built to wind up to 7" traverse.

Bulletin A-95-A on REQUEST



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Westfield, Massachusetts, U. S. A.

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FOSTER MODEL *102* The Flexible Winder

FOR COTTON, MERCERIZED, WOOL, WORSTED, MERINO, SPUN NYLON OR RAYON YARNS

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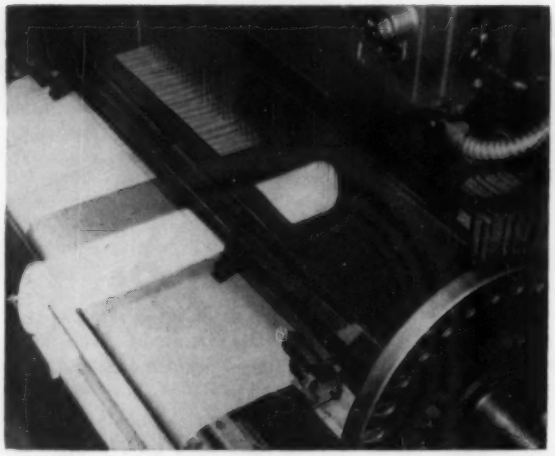


Loom Light

An adjustable light that directs a beam through the reed and heddles of a loom has been announced by Meiners Optical Devices Ltd., Manchester, England.

The weaver can use the light to assist in drawing in threads with a minimum of eye strain. The beam is directed on the desired area, and there is no glare or distracting side light.

Circle T-6 on Reader-Service Card

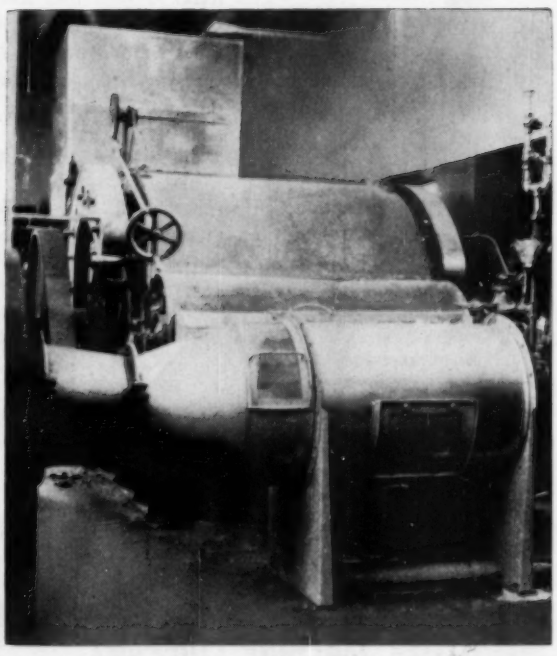
Wool Oiling Device

The Vortex wool oiling device, announced by Atkinson, Haserick & Co., Framingham, Mass., controls the automatic application of emulsion after the stock leaves the picker.

The device saves 25 to 40% in emulsion costs by making even applications of the emulsion to opened fibers. Less card stripping is required because oil sops are not formed. Fewer ends down are reported in spinning because the even emulsion application helps to get more-level yarns.

A micrometer control dial sets the emulsion for as little delivery as 1 gal. per hr. up to the maximum required.

Circle T-7 on Reader-Service Card



Drying System

Fabrics are dried by contact with heated particles contained in a column through which the goods pass in a method developed by a group of English companies. Heaters in the medium, called a fluid bed, heat the particles directly, and air is blown through the system to remove water vapor.

Drying speed is said to be four times that of conventional methods, and temperatures can be closely controlled.

Hydrophobic fibers may be continuously dyed by passing the padded goods through the fluid-bed drying system.

The six companies forming the developing and manufacturing group are British Tufting Machinery Ltd.; Hunt & Moscrop Ltd.; Mather & Platt Ltd.; Sir James Farmer Norton & Co. Ltd.; F. Smith & Co. (Whitworth) Ltd.; and Tomlinson's, Rochdale, Ltd., all of Lancashire, England.

Circle T-8 on Reader-Service Card

ACID ALIZARINE BLUE B

Fast Mordant Blue B
Pr. 93

ACID ALIZARINE BLUE B is an acid mordant dyestuff producing full and bright Navy Blue shades, adapted for the dyeing of men's wear, uniforms and ladies' dress goods. Silk effects are left reserved.

In addition to its unexcelled light fastness, it is excellent to milling, washing, potting and decatizing. Due to its level dyeing properties, it is used extensively for the dyeing of piece goods.

HARSHAW

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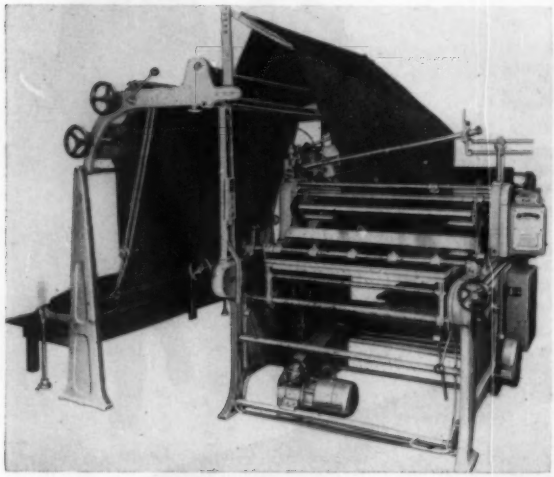


Measuring and Doubling Machine

Very accurate measuring of cloth lengths is featured in a doubler produced by A. Montforts Maschinenfabrik, M. Gladbach, Western Germany, and sold and serviced in the U. S. by Cocker Machine & Foundry Co., Gastonia, N. C.

A wide range of types and sizes of the machine is available. The machines meet Government requirements of ±0.2% accuracy in measuring the lengths of fabric being handled.

The folding table is lowered automatically after each fold has been made, maintaining its horizontal position at all times. Automatic electric guides align selvages so that perfectly folded pieces are produced.

Low tension in the feeding arrangements and reduced surface friction of the doubling triangle make it possible to fold goods without exceeding the 1% shrinkage limit required on many fabrics.

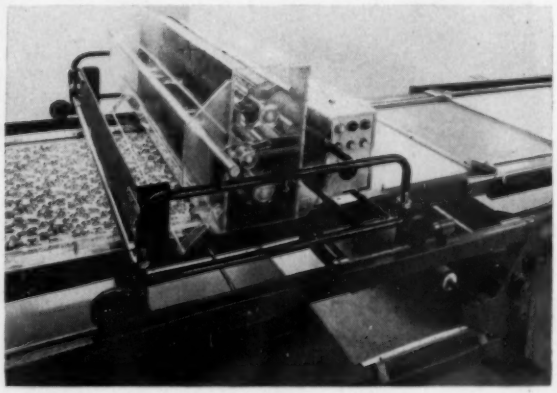
Circle T-9 on Reader-Service Card

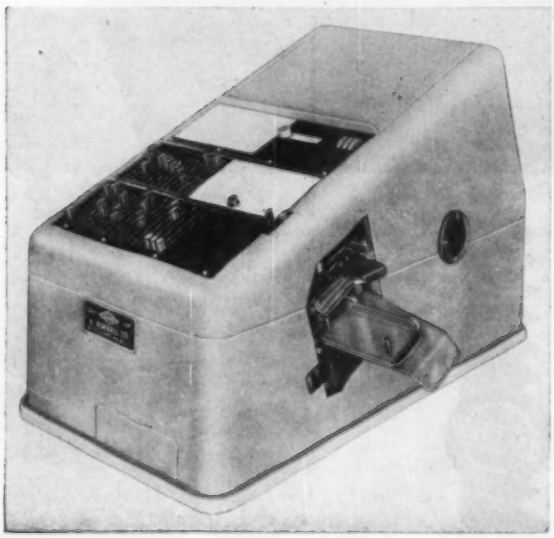
Flock Beamer

The FO-2 flock beamer is being offered by Vollenweider & Saladin through its United States agent, Cosa Corp., 405 Lexington Ave., New York 17, N. Y.

The unit is designed to work on a screen-printing table and deposits flock from an electrically charged screen. Excess flock that is not attached to the gummed areas loses its charge and is drawn back to the screen automatically. Electrostatic deposition of flock produces good alignment and clearly defined patterns.

Circle T-10 on Reader-Service Card





Punch-Marking Machine

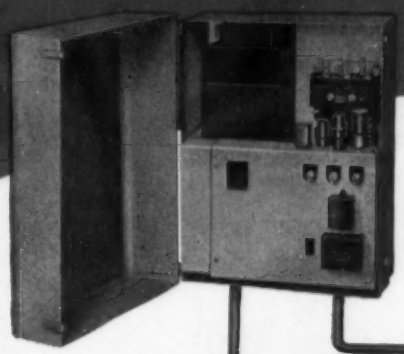
A punch-marking machine made by A. Kimball Co., 307 W. Broadway, New York, N. Y., provides a production-control system for pinpointing orders in production, the quantities completed and still to be manufactured, the production rate by department or operator, and costs.

The system simplifies the speed of payroll preparation where operators are paid on a unit basis. The detailed reports enable production problems to be spotted quickly. Below-par departmental operations can also be spotted quickly.

Circle T-11 on Reader-Service Card

DYNAMATIC®

Drive Package Provides Infinitely Adjustable Speeds from AC Power Source



CONTROL PANEL

CONTROL STATION

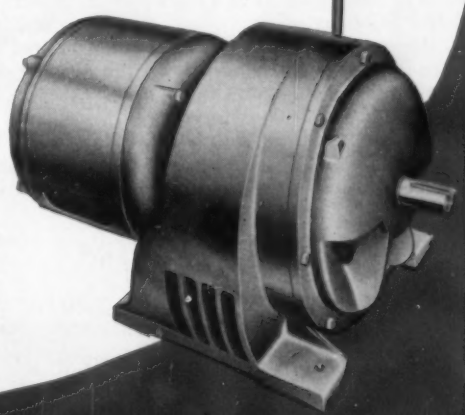
The complete Dynamatic power package includes all components required to provide infinitely adjustable speeds from an alternating current power source. A Dynamatic Ajusto-Spede® or Dynaspede® Drive, with electronic control and pushbutton station, satisfies the requirements of almost any application where proper machine operation or material processing depends upon control of operating speeds.

The compact control panel may be remotely mounted to conserve valuable space on the driven machine. The pushbutton station at the operator's position puts vital controls conveniently at the operator's fingertips and requires a minimum of space.

Speeds are infinitely adjustable from 0 RPM to full output speed, and accurate speed regulation may be obtained from 100 RPM to full output speed.

Ajusto-Spede® Drives, available in ratings of ¼ horsepower to 75 horsepower, are air-cooled. Dynaspede® Drives, rated from 3 to 75 horsepower, are liquid-cooled. Raise your productive efficiency with Dynamatic eddy-current units.

DYNAMATIC®
AJUSTO-SPEDE DRIVE



Send for Illustrated Literature Describing Dynamatic Adjustable Speed Drives

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MANUFACTURING COMPANY
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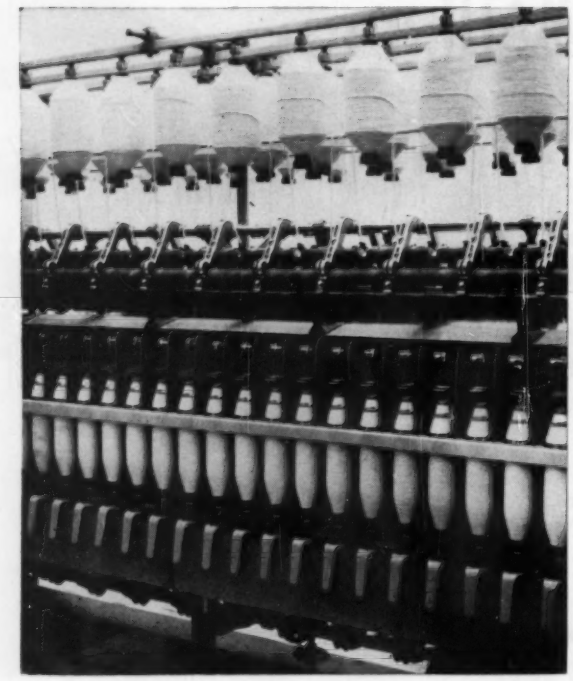


Cotton Spinning Frame

A cotton spinning frame with a fixed spindle rail that keeps balloon constant has been announced by A. Carniti & C., Oggiono (Como), Italy.

The thread guide is located vertically above the spindle and follows the movement of the ring rail. An antiballoon ring reduces centrifugal force by following the movement of the ring rail and thread guide.

Other features are high speeds, large bobbins, interchangeable tubes for coarse to fine numbers, enclosed head end, and one ratchet wheel for all numbers.

The machine is sold in North America by Stellamcor, Inc., 60 E. 42nd St., New York 17, N. Y.

Circle T-12 on Reader-Service Card

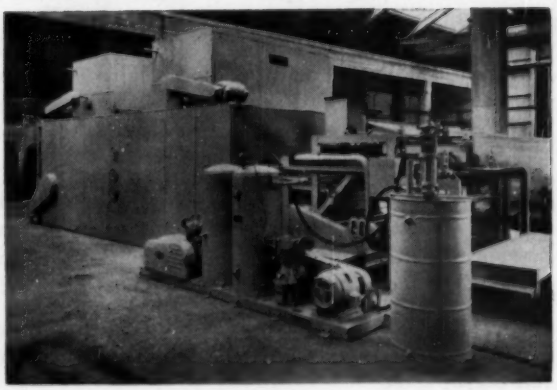
Carpet-Backing Range

A versatile range designed for either spray or roller coating of tufted-carpet backings has been developed by British Tufting Machinery Ltd., Whitebirk Drive, Blackburn, Lancashire, England.

The range consists of a three-pass pin tenter, a stainless-steel lick-roller assembly, and a spraying-head unit.

Heavy applications of latex from 2 oz. per sq. yd. up can be applied by the roller; and the spraying unit is used for lighter amounts of backing.

By using available adjustments, heavily loaded or straight latex compounds can be applied on the range. The drying cabinet is designed to provide efficient drying by high-velocity hot air.



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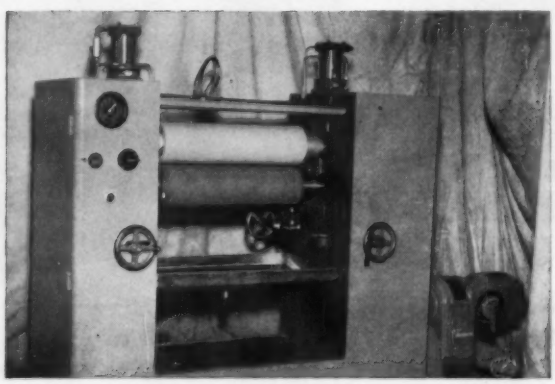
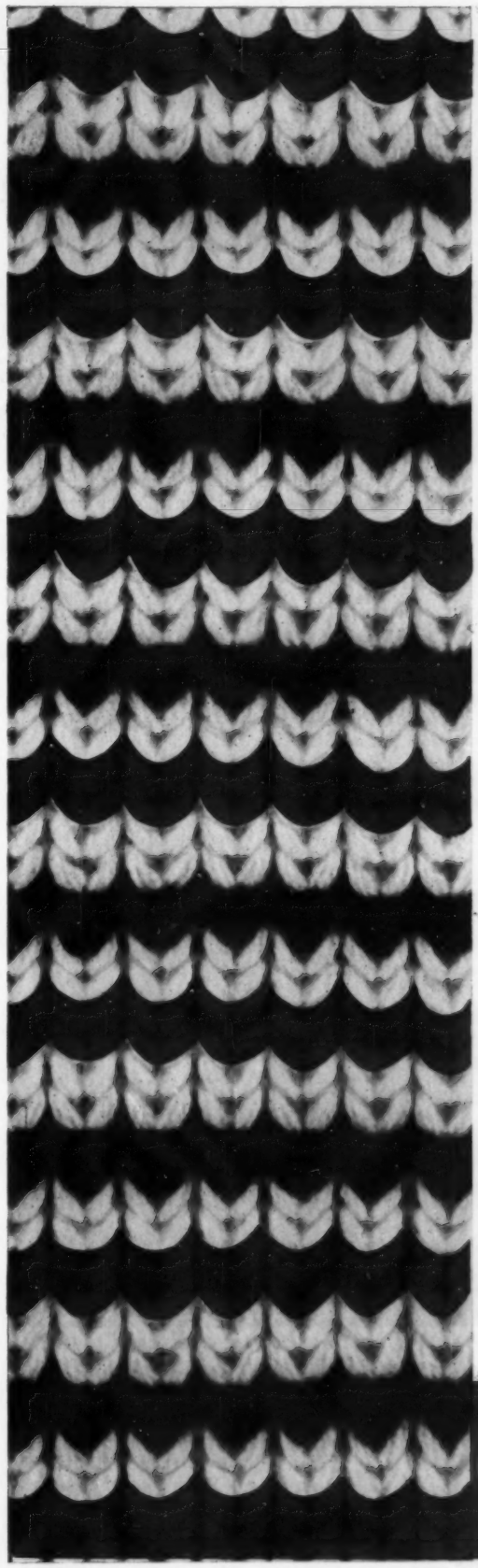


Narrow-Fabric Compacter

A production machine for compacting yarns, tapes, and narrow fabrics in general is now available from Fabric Research Laboratories, Inc., Dedham, Mass.

The 24-in. machine operates on the same principle as the wider models and produces shrunk tapes, yarns, braids, or ribbons with less than 1% residual shrinkage. Unusual surface effects are possible because fabrics processed in the machine gain in thickness as the length is reduced.

Circle T-14 on Reader-Service Card



It's as simple as . . .

"Knit and Purl" BULKIES KNIT BETTER

ON . . .

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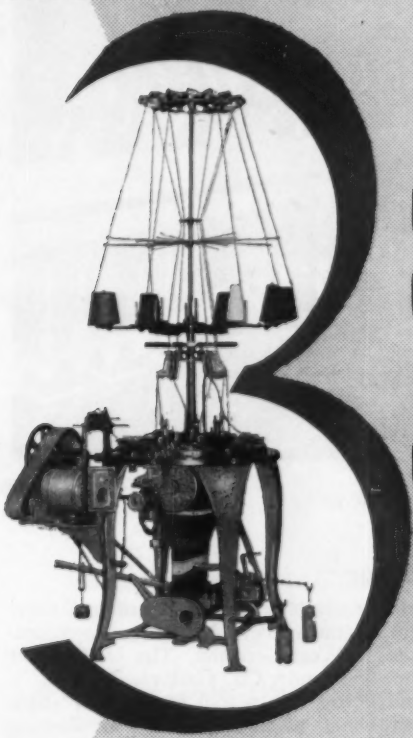
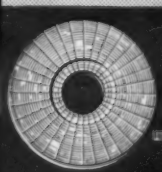


3 COLOR STRIPES

ACTUAL SIZE STITCH IN 3 COLORS KNIT ON LEIGHTON'S . . . COARSE GAUGE MACHINES

Available in 2½ • 3 • 4 • 5 Cut
Inquire Today for Additional Information



LEIGHTON MACHINE COMPANY

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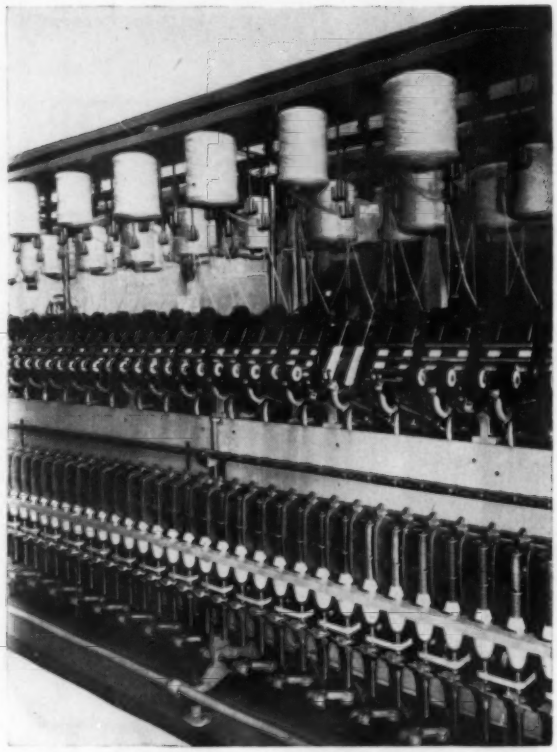


Worsted Spinning Frame

The C.AC.-C.AH. spinning frame announced by A. Carniti & C., Oggiono (Como), Italy, has a fixed spindle rail and constant balloon for spinning worsted and synthetic fibers.

Constant tension on the yarn during the bobbin formation permits an increase of speed with tubes up to 330 mm. An antiballoon ring reduces the centrifugal force. An inclined 60° drafting system permits the twist of the yarn to run up to the front rolls with a flexible tension to avoid many yarn breaks.

The machine width is 720 mm. Rotation of the spindles for left and right twist is done by changing a gear. The spindles are tape driven, and there is only a single row of spindle-drive pulleys. Each tape drives four spindles.

The tape is kept under tension by a grooved tension roll. When the machine is started, the spindles begin to run before the drafting system to tension the thread.

The drafting system is the pendulum or bottom-lever type with four cylinders, dead plate, and graduated and adjustable pressure on the back bottom roller.

The pressure on the front top rolls can be regulated by a spring when the machine is stopped or running. The pressure can be adjusted individually or along the whole length by a handle that drives the worm screw.

The metal creel holds bobbin holders on ball bearings up to 240 mm. A Carniti & C. is represented by Stellamcor, Inc., 60 E. 42nd St., New York, N. Y.

Circle T-15 on Reader-Service Card

High-Speed Shear

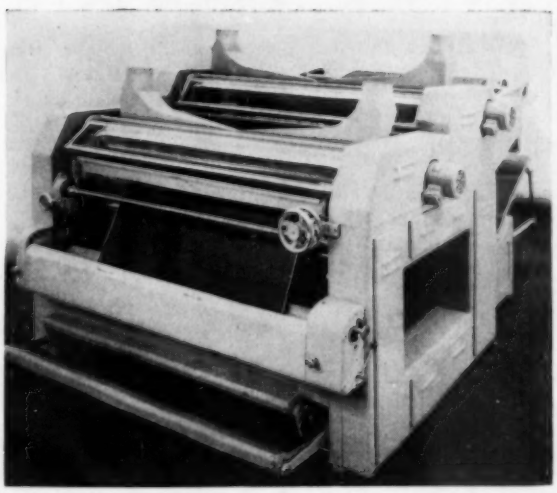
Shearing machines adaptable to the shearing of many fabrics have been announced by A. Montforts Maschinenfabrik, M. Gladbach, West Germany. The U. S. agent is Cocker Machine & Foundry Co., Gastonia, N. C.

The shears can be had with one or two cutters, which are adjustable to the most advantageous angle for shearing any fabric. The cutters have 18 spiral blades and are mounted in needle bearings to provide vibrationless operation.

Seam skippers are standard equipment on the two-cylinder models and are optional on the one-cylinder machines.

There are separate drives for cloth feed and the shearing cylinders. A nap-raising roller can be installed if necessary.

The shears have a variable-speed cloth feed, and the two-cylinder model will produce up to 50 yds. per min. of cloth. Various cylinder widths up to 94½ ins. are available.



Circle T-16 on Reader-Service Card

Carpet Counter

A yardage counter especially designed for measuring carpet is announced by B. & F. Carter & Co. Ltd., Bolton, England.

The counter is fitted with a positive cam-roller reset action and can be reset to zero by a lever on the right-hand side of the counter case. Carpet is hard to measure accurately on the face side, and therefore this counter is designed so that the measuring wheel contacts the back of the carpet. The counter is operated by electrical impulses and is suitable for remote control installations.

Circle T-17 on Reader-Service Card

Specify SOLVAY Chlorine and get 4-Way Service

These four services are available to you without extra cost when you specify SOLVAY Chlorine:

1 Delivery Service. SOLVAY's Chlorine production centers at Syracuse, N. Y., Moundsville, W. Va., Hopewell, Va., Brunswick, Ga. and Baton Rouge, La. – plus a network of local distribution centers – assure prompt delivery of both carload and less than carload quantities.

2 Technical Service. SOLVAY maintains a special Chlorine Section in its Technical Service Department to assist you in the use, handling, storage and in all applications of chlorine, including textiles, paper, water and sewage.

3 Safety Service. SOLVAY has pioneered the development of chlorine safety programs and equipment. SOLVAY-engineered Emergency Kits for cylinders, 1-ton containers and tank cars are available to users of SOLVAY Chlorine on a purchase or loan basis. SOLVAY safety wall charts give instructions on unloading, handling and first aid.

4 Literature Service. SOLVAY has a series of technical and engineering service bulletins on chlorine that include physical and chemical properties, analysis and uses.

Mail for literature, further information!

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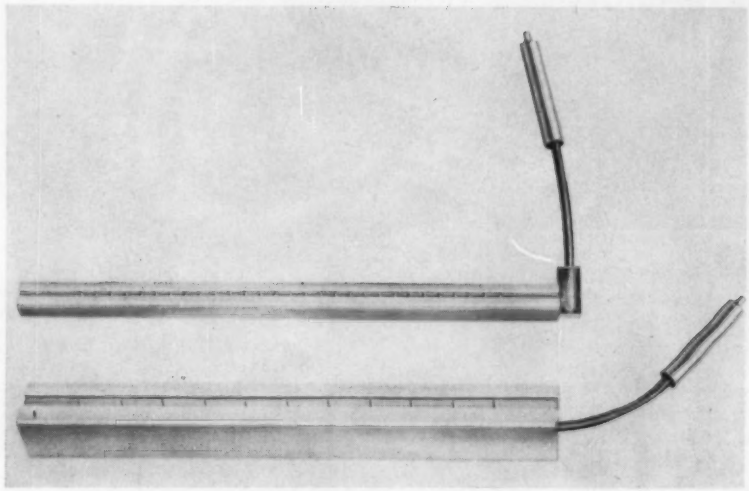
For more data, write this page number on Reader-Service card. →



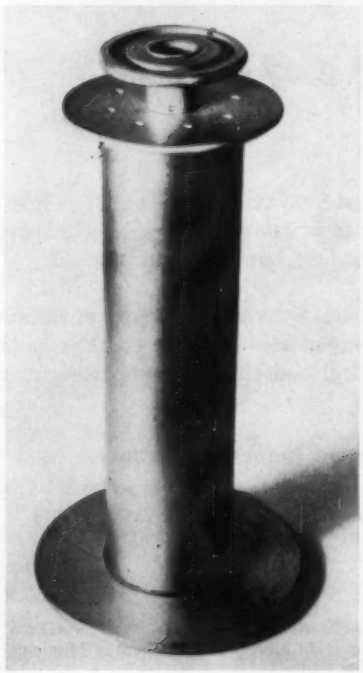
Static Bars

Square, totally encased static bars are available from The Simco Co., 920 Walnut St., Lansdale, Pa. The bars are designed for maximum neutralizing efficiency and require no maintenance except an occasional brushing or blowing off of the points.

A complete static-eliminating system consists of one or more of the static bars connected to an a.c. power unit. The material to be discharged passes near but does not touch the bars.

The bars are used on warpers at stop motions on the creel and ahead of the beam, above the doffer combs on cards, ahead of rewinds on beck slitters, and for several other textile applications.

Circle T-18 on Reader-Service Card



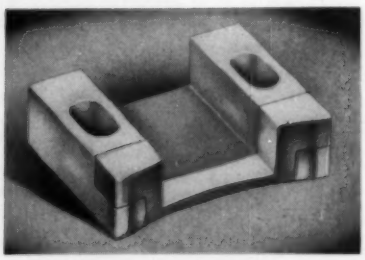
Twister Bobbin

A twister bobbin with a grip knob that includes a special recessed ring for color code identification has been introduced by Allentown Bobbin Works, Allentown, Pa. Fitted with paper rings of various colors, this recess provides immediate visual identification for different yarns.

The all-aluminum barrel and heads are brazed together, and the bobbin is completely anodized to prevent corrosion. This construction without joints keeps yarn from trapping because there are no cracks between the heads and the barrel.

The bobbin will stand up to continual steaming and twisting of high-tensile-strength nylon yarns. A 2-lb. capacity bobbin is shown, but larger and smaller sizes are produced.

Circle T-19 on Reader-Service Card



Ceramic Throat Plates

Ace throat plates with AiSiMag inserts for 400- and 474-needle circular knitting machines have been announced by American Lava Corp., Chattanooga 5, Tenn.

The ceramic insert, with a hardness of 8 on Mohs' scale, is attached to a molded-nylon base to absorb impact and vibration. The throat plate is mounted to the knitting machine with two screws, and the yarn runs over the AlSiMag insert.

The throat plate eliminates bad work, waste, and imperfect-quality stockings resulting from cut or worn metal throat plates. Expensive downtime for polishing, regrinding, and replacing is saved.

Circle T-20 on Reader-Service Card

Centrifugal Extractor

Many improvements are featured in the Whirlwind line of extractors made by Fletcher Works, Glenwood Ave. and Second St., Philadelphia, Pa. The stainless-steel baskets are self-balancing and are perfectly smooth inside. The basket spindle turns on SKF bearings enclosed in a grease-packed housing.

The drive is through multiple V-belts, and the extractors can be supplied with automatic brakes operated hydraulically or by compressed air. Standard models are available with 40-, 48-, and 60-in. baskets.

CONTINUED ON PAGE 172

Circle T-21 on Reader-Service Card

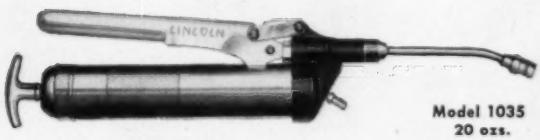
Cost-cutting *Lincoln* Lubricating Equipment for Textile Machinery

. . . complete selection of heavy duty grease guns . . . and grease fittings

High pressure Lincoln Grease Gun being filled from Lincoln Filler Pump.

Slash operating costs, boost mill production, insure productive maintenance in your textile operations with Lincoln lubricating equipment . . . choose from a complete line that enables you to keep your textile machinery working at peak efficiency!

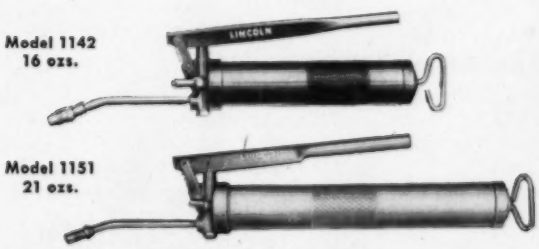
Here are just a few of the available Lincoln Heavy Duty Lever Guns . . . built to last, with sturdy steel construction and special rust-resistant plating. High pressure and volume models . . . large and extra large lubricant capacities . . . all models designed for fast, clean refilling (each equipped with a Filler Nipple for fast refilling from a Lincoln Filler Pump). Easy to operate . . . engineered for fatigue-free lever action.



Model 1035
20 ozs.

• MASTER HEAVY DUTY LEVER GUNS

Available in both high pressure and volume models. Extra large lubricant capacity . . . 20 ozs. and 32 ozs. Positive, easy priming . . . equipped with extra large, powerful Follower Spring. Can be refilled in 30 seconds from a Lincoln Filler Pump, or by suction. Pump all types of pressure gun lubricants in any weather.

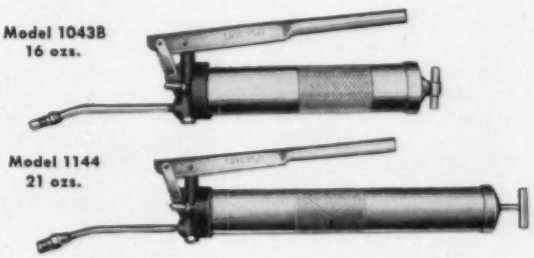


Model 1142
16 ozs.

Model 1151
21 ozs.

• SPECIAL HEAVY DUTY LEVER GUNS

Deliver all pressure gun lubricants in any weather. Spring primed, and may also be Force Primed. Large lubricant capacity . . . available in High Pressure Models, 16 ozs. and 21 ozs. Can be refilled in 30 seconds from a Lincoln Filler Pump, or by suction.



Model 1043B
16 ozs.

Model 1144
21 ozs.

• SUPER HEAVY DUTY LEVER GUNS

Large lubricant capacity . . . available in high pressure models, 16 ozs. and 21 ozs. . . . in volume models, 16 ozs. Spring or force primed. Can be refilled in 30 seconds from a Lincoln Filler Pump, or by suction.

• GREASE FITTINGS

All types and thread sizes . . . Hydraulic Ball-In-Head — standard and special fitting designs.

Remember, look to Lincoln for the most complete line on the market . . . from grease fittings and grease guns to completely automatic centralized lubrication systems!

Sales and Service facilities are available through a coast-to-coast network of leading industrial distributors!

Simplify specification and purchasing . . . write today for new Lincoln Catalogs: Nos. 64, 80-1, 811, 806-R, and 41.

Lincoln

LINCOLN ENGINEERING COMPANY
Division of The McNeil Machine & Engineering Co.
5742 Natural Bridge Avenue • St. Louis 20, Missouri

For more data, write this page number on Reader-Service card. →

NEW DYES AND CHEMICALS

Dye Carrier

DSP-112 . . . designed as a dye carrier for Dynel, produces excellent union shades on Dynel blends in a single-bath dyeing process. The carrier works by increasing the dyeing ability of the Dynel to the level of the synthetic or natural fibers with which it is blended. Union Carbide International Co., 30 E. 42nd St., New York 17, N. Y.

Circle D-1 on Reader-Service Card

Finishing Oil

NO-Odorol 1299-S . . . a sulfonated oil made from saponifiable oils, is suggested for softening cotton, rayon, and synthetics fabrics. A full, well-lubricated hand is produced by the product, which is compatible with most starches, gums, and anionic or nonionic products used in finishing. The oil resists yellowing and odor development and possesses excellent wetting-back properties. American Cyanamid Corp., Organic Chemicals Div., Bound Brook, N. J.

Circle D-2 on Reader-Service Card

Leveling Agent

Emkatex LS . . . retards strike in dyeing spun nylon when the fiber is pretreated with 2% of the product and 1% ammonia. Designed to work with premetallized or acid colors, the retardant is also useful in wool dyeing. The product is stable to most dyehouse processing conditions and is a good dispersant for all dyestuffs. Emkay Chemical Co., 319-325 Second St., Elizabeth, N. J.

Circle D-3 on Reader-Service Card

Substantive Softener

Dexene CS-15 . . . exhibits cationic-nonionic properties useful in producing a soft hand on all fibers. It can be used as a self-finish or added to resin finishes and is valuable as a yarn lubricant in package-dyeing operations and in sewing or cutting. The product has low chlorine-retention properties and resists yellowing under processing conditions. Dexter Chemical Corp., 819 Edgewater Rd., New York 59, N. Y.

Circle D-4 on Reader-Service Card

Premetallized Dye

Lanasyn Brilliant Yellow 5GL . . . a level-dyeing color suggested for wool, nylon, and silk to produce bright green shades with other Lanasyn dyes. Fastness properties on wool make the color suitable for men's and women's wear, and the color is adequate for all nylon-dyeing requirements. Sandoz Chemical Works, Inc., 61 Van Dam St., New York 13, N. Y.

Circle D-5 on Reader-Service Card

Fixative

Emkafix RXC . . . improves crockfastness of basic colors dyed on Orlon 42. Fastness of direct colors to bleeding, perspiration, and hot pressing are improved when the product is applied as an aftertreatment following dyeing. Combined with copper acetate in the final bath, the fixative improves light- and washfastness, with some shade change. Emkay Chemical Co., 319-325 Second St., Elizabeth, N. J.

Circle D-6 on Reader-Service Card

How To Reduce Static on Arnel Fabrics

Two methods of producing a permanent antistatic finish on Arnel fabrics have been developed by Celanese Corp. at its Textile Applications & Development Laboratories in Charlotte, N. C.

For plants equipped with the Burlington pressure-dyeing machine, a suggested routine for tricot fabrics to be dyed is:

1. Fill the Burlington unit with warm (100 to 120° F.) water, and run until there is a 2- to 3-lb. pressure drop across the beam.
2. Add 6 lbs. Triton X-100 and 6 lbs. Igepon T Gel.
3. Circulate 5 mins. (inside-out flow).
4. Add 35 lbs. caustic soda flakes dissolved in water, and continue circulation.
5. Raise the temperature to 205° F. as fast as possible (probably 20 to 30 mins. required).
6. Run at 205° F. for 30 mins.
7. Drop bath.
8. Give a hot rinse (150 to 160° F.) for 5 to 10 mins.
9. Drop bath.
10. Give an overflow hot rinse for 5 to 10 mins.
11. Drop bath.
12. Fill with cold water.
13. Add 2 liters 56% acetic acid.
14. Run 5 to 10 mins. cold.
15. Drop bath.
16. Start the regular dyeing procedure.

If the Arnel is to be bleached white, the alkaline treatment should follow bleaching to assist in the removal of residual peractic acid. For light shades, the alkaline treatment can be combined with the prescour.

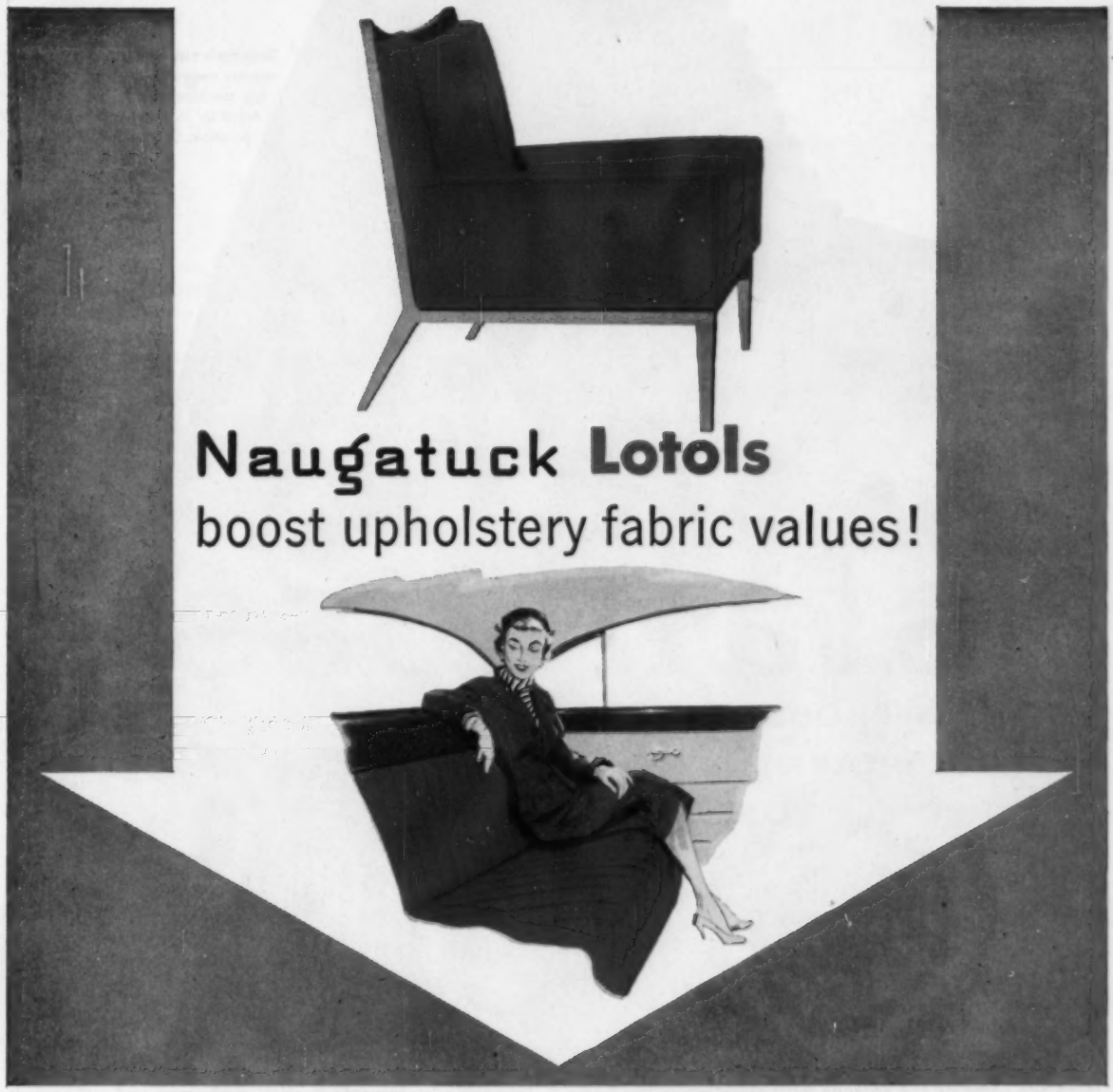
For plants that use becks, the following routine has proved successful:

3½ grams per liter caustic soda
1.0 gram per liter Igepon T Gel
1.0 gram per liter Triton X-100
Run 1 hr. at 90° C. (194° F.).

Acetic acid or sodium bicarbonate should be used in a rinse bath to neutralize the caustic soda.

For developed navies and blacks, the alkaline treatment should follow dyeing; and in these cases, 2.5 grams per liter of caustic are used and the treating time is reduced to 30 mins.

Besides providing an antistatic effect, the treatment is said to reduce soiling, improve resistance to gas-fading and crocking, and give a softer hand.



BACK-SIZING modern upholstery fabrics with just the *right* formulation of rubber or rubber-and-plastic latex adds value to the fabric out of all proportion to its meager cost. Specifically, it—

- **Anchors the weave, twist or pile**
- **Eliminates raveling of cut edges**
- **Improves body and hand**
- **Minimizes water spotting**
- **Prolongs wear**
- **Maintains dimensional stability**

Leading upholstery manufacturers depend on Naugatuck's tailored-to-order latex compounds to give their fabrics added value, aesthetically as well as physically!

Such a latex, custom-compounded in ready-to-use form by Naugatuck, is sold under the trade name LOTOL. And behind every LOTOL® is the know-how that belongs to the world's leading latex producer and compounder, plus the facilities of *three* modern compounding plants strategically located at Gastonia, Naugatuck and Los Angeles to save you shipping time and expense.

United States Rubber

Naugatuck Chemical Division

Naugatuck, Connecticut

BRANCHES: Akron • Boston • Chicago • Memphis • New York • Phila. • Mfg.: Los Angeles • Gastonia • Naugatuck • CANADA: Naugatuck Chemicals, Elmira, Ont. Rubber Chemicals • Synthetic Rubber • Plastics • Agricultural Chemicals • Reclaimed Rubber • Latices • Cable Address: Rubexport, N. Y.

For more data, write this page number on Reader-Service card. →

Stainless is used extensively in the backwasher shown at left, and the scouring machine below, both manufactured by C. G. Sargent's Sons Corporation, Graniteville, Mass.

HOW

stainless

HELPS PRODUCE
BETTER YARNS
AT LOWER COST

Here are some of the reasons why *stainless* is the best friend the textile mill ever had:

Resists Corrosion — Lasts Longer — Stainless just about never wears out—and its smooth, rust-free surface resists the corrosive bite of most chemicals used in textile manufacture. The backwasher and scouring train illustrated, for example, use stainless wherever liquors or chemicals come in touch with metal. Their manufacturer says, "The caustics and acids used, particularly in scouring heavy grease wools, are pretty strong stuff—few other metals would stand up under such exacting conditions."

Stainless Babies Fibres — Stainless presents a smooth, non-snagging surface to stock in transit through dryers —especially important with cashmere and other soft, tender fibers. And stainless is just as vital for parts such as teeth and rakes in openers and pickers. "For stainless helps do a more thorough preparatory job without damage to fibers—makes for better, easier, far more economical production of first quality yarns." And, of course, stainless is about the easiest material to keep clean that you can find.

There's a lot more to the story of how stainless means greater efficiency—greater profits in the textile mill. Much of it is contained in Crucible's 32-page booklet, "Making the Most of Stainless Steels in the Textile Industry." Write for your free copy today.

CRUCIBLE first name in special purpose steels

Crucible Steel Company of America

Canadian Distributor — Railway & Power Engineering Corp., Ltd.

Do you need help on a technical problem? TEXTILE WORLD is at your service in helping solve problems in yarn manufacturing, weaving, knitting, dyeing, finishing, and other textile operations. A large staff of mill men, consultants, and other experts are available for authoritative answers. Send your problem to the Editor, Questions and Answers, TEXTILE WORLD, 201 E. Coffee St., Greenville, S. C.

Feed Boxes on Cards Have Been Improved

Technical Editor:

Has electronics ever been used to control the weighing mechanism of wool cards to feed the correct amount of stock to the card? (1308)

Electronic devices have been used in mills to control the correct amount of fibers dropped from the weighing pan to the feed table. The object of the devices was to level successive weighings of the stock to obtain an even web for the spinning of even yarn.

Because of the advancement in the construction of the weighing mechanism on the new feed boxes for cards, these electronic devices are seldom used. The new weighing mechanisms are so precise that their movements are within the permissable tolerance to produce the required roving.

Finishing Treatments for Cotton Duck

Technical Editor:

What finishing treatments are given to cotton duck? (1312)

Considerable cotton duck is put into service right off the loom; but for special purposes duck may be waterproofed, flameproofed, mildewproofed, or decorated for awnings.

Probably the most used finish is the water-repellent finish given to 8- to 10-oz. ducks that go into tentings. Early finishes of this type consisted of padding the goods through a stearic-acid emulsion and then giving the dried goods a run through an aluminum-acetate bath.

The result was a fairly good water-repellent finish, and it was later improved by substituting paraffin wax for most of the stearic acid. The finish is not permanent and will gradually lose its efficiency.

Later finishes of this type are based on pyridin and are more lasting.

Flameproofing is necessary for some purposes, such as circus tents, and is generally based on depositing various metallic salts in and on the fiber to retard burning. More-recent work with bromine-phosphorus compounds shows very promising results, but these compounds are not yet generally available.

Mildewproofing can be done with copper linoleate if the greenish color is not objectionable. Copper fluoride was popular early in World War II for this purpose.

Where duck is to be decorated, it is generally printed with pigmented oils closely resembling paint. Considerable protection from the action of sunlight is obtained by precipitating lead chromate in and on the fibers. The process consists of padding on a soluble lead salt such as lead acetate, passing the goods through a sodium dichromate solution, and rinsing and neutralizing.

Cotton ducks are usually not bleached, but if necessary they can be scoured on a jig and given a peroxide bleach or a chlorine bleach in the open width.

Tips To Prevent Streaky Denims

Technical Editor:

We are having trouble with warp streaks or reed marks on our 10-oz. denims. These marks do not show in the cloth until the cloth is finished. Do you have any suggestions to cure this? (1304)

The warp streaks may be caused by mixed yarn that takes the dye differently and does not show in the cloth until the cloth is finished. An open dent in the reed could also make such a mark that would be hard to see until the fabric is desized.

A warp end under more tension than the others, such as an end carrier from near the selvage to the center of the warp to replace one that is missing, can cause a streak in the cloth. An end that is frayed by a rough drop wire, heddle eye, or reed will raise the fibers; and it will be affected differently from the others in the finishing operations.

Reedy cloth is sometimes caused by a bad setting or timing of the harness. If the warp yarn is heavily sized, these reed marks will not show until the fabric is desized in the finishing process.

Pulling the bottom shed down until it almost touches the shuttle race and timing the harnesses to cross when the lay is 2½ or 3 ins. from the fell of the cloth will help give a good cover to the fabric. Setting the whiproll and the take-up roll high will also help.

Metallic Clothing Is Used on Flats

Technical Editor:

Is metallic card clothing used on flats? (1311)

Flats that are covered with a special metallic clothing are supplied by an English firm. The metallic clothing is made up into short pieces that are set into the flat so they are parallel to the wire on the cylinder.

Greater waste savings are claimed for this type of flat. Carding action is said to be more efficient because the cylinder and flat wire are always clean. The fiber is not drawn through a mass of dirty and filled-up regular wire teeth, but it is passed through the card with one-third less waste.

Latest Developments To Shrinkproof Wool

Technical Editor:

What are the latest developments to make wool shrinkproof? (1307)

The Stevenson processes are being used successfully in Europe to treat wool top, yarn, socks, sweaters, and fabric. The ZB process uses sodium hypochlorite and potassium permanganate. The XB process uses permono-sulfuric acid. Both processes are carried out in normal dyehouse machines.

The Pam-ep treatment under development by the U. S. Department of Agriculture shows great promise. The treatment also reduces pilling.

The material to be treated is first wet out and dried and then is soaked in a water emulsion of a polyamide-epoxy mixture. After drying, the fabric is baked at a mild temperature to fix the resin in the fiber surface. The material is then machine washed and dried.

The process has been given to both dyed and undyed goods. About 8% resin take-up is needed for loose-knit sweaters, 5% for socks, and 2% for flannels.

The treatment is permanent and does not affect water repellency. The only change in the fabric hand is a slight stiffness. This stiffness will possibly be offset with softening agents.

Tips on Weaving Nylon

Technical Editor:

We are weaving 205-den. interlining on C&K S-3 looms. We are bothered with tight and slack lengthwise areas in the cloth. Do you have any suggestions? (1268)

Yarn prepared on modern warpers and slashers, if warps are slashed, should not give this trouble.

However, if older beamers are used, a sheet of kraft paper the full width of the loom placed in the warp every 25, 50, or 100 yds. helps prevent the warp streaks. The ends will not bury themselves in the warp when a weaver unwinds several broken ends because the next piece of kraft paper makes correction necessary.

Check the denier of the yarn closely. Mixed yarn with even a few deniers' difference will result in warp streaks.

Humanics — A TW Brief

Why Prompt Reporting Pays

Sam Morris reported an injured toe to his first-line supervisor, Marvin Clifton. But he reported it the day after the accident happened.

"How do I know you didn't drop something on your toe at home or hit it with a golf club?" Marvin asked.

"You'll just have to take my word for it. I dropped a yarn beam on it yesterday while I was overhauling a loom," Sam said.

"You know that you're supposed to report all accidents. Why didn't you tell me about it when it happened?"

"It happened just before quitting time and didn't seem serious enough to bother with. I was in a hurry to get the loom started, and the toe didn't start hurting until I got home."

An X-ray picture showed a fractured bone in Sam's toe, and he lost several days from work. But the toe wasn't the only thing broken; the accident broke a long string of accident-free months in Marvin's department.

When Sam returned to work there was a period of strained relations between him and his supervisor, although they had previously been good friends. Sam resented being accused of claiming an industrial accident for something that happened off the job, and Marvin was not sure that the accident did happen on the job. He was also miffed because Sam had marred the perfect safety record of the department.

However, after giving the matter some thought, Marvin and Sam got together and admitted that both had been at fault. Sam should have reported the accident as soon as it happened, and Marvin should have made certain that all employees understood the correct procedure for reporting accidents.

How To Bleach Stretch-Wool Socks

Technical Editor:

We are knitting stretch wool socks from 96-grain yarn plaited with 2/100-den. stretch yarn. What is the best method to get a good white stretch sock? (1278)

If the socks were knitted correctly so they will relax on wet processing, you can get good results with this method:

Scour the socks in a laundry washer. If the socks are made from oil-spun yarns, scour them with a detergent and soda ash for 15 mins. at 120° F. Use the soda ash sparingly, and give the goods two 5-min. rinses.

Bleach overnight in a stationary stainless-steel tank with a two-volume peroxide bath. Use 2 gals. of 100-volume peroxide per 100 gals. water at a starting temperature of 130° F.

Bring the alkalinity to pH 9 by Stabilizer C and tetrasodium pyrophosphate. Allow the bath to cool, and lift the socks out in the morning onto a drain board. After draining 30 mins., give the socks two 5-min. rinses at 120° F.

To the third rinse water, at 90° F., add 6 oz. Tinopal WGA and 1 qt. formic acid per 100 lbs. Raise the bath to 140° F., and run for 15 mins. Drop the bath, and fill it with 90° F. water. Add 1% cationic softener, run for 5 mins., and hydro-extract. Dry the hose in a relaxed state.

Plastic Gears Are Used On Many Textile Machines

Technical Editor:

We are seeking information on the application of plastic gears to textile machines. What plastics are best suited for textile machines and for which gears? (1309)

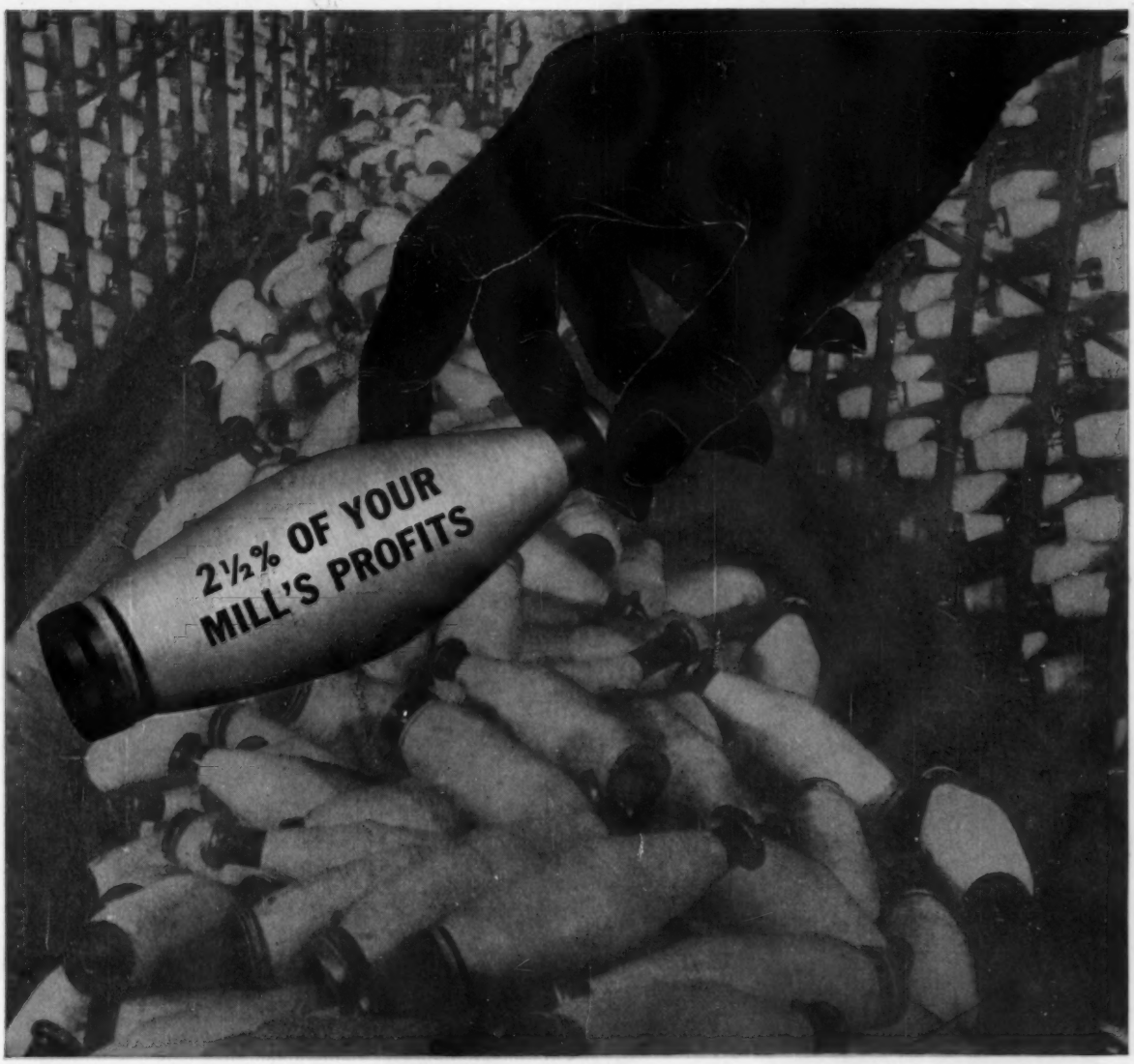
There are various types of plastic gears. The most used gears are made from the Celeron, Micarta, or Textolite types of fabric. This fabric is made by impregnating sheets of woven duck with a synthetic resin.

One sheet is superimposed on another until the required thickness is attained. The entire mass is heated under controlled pressure to fuse the sheets together into a material that possesses unusual strength, toughness, and resiliency.

This material, when used for gears, eliminates noise, reduces vibration, and does not wear out its mating gear.

This material is used for such gears as cylinder gears on spinning frames, picker gears, draw-frame gears, and fitting gears on printing machines.

Nylon gears are also used where lighter loads are required.



STOP THIEF!

Friction is a silent thief. You can't see it or hear it.

Unless your machinery breaks down, you may never even realize that excessive friction exists.

But you may be puzzled over mounting power costs. For this is one of the tolls that friction takes . . . a toll no one can afford with today's narrow profit margins.

The simple answer to friction—as well as to staining, oxidation, and other problems—is one of the 17 specially made Cities Service Textile Oils.

By minimizing friction and reducing power loads, these remarkable oils can actually add as much as 2½% to your mill's profits!

Why not take advantage of these benefits? Talk with a Cities Service Lubrication Engineer. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

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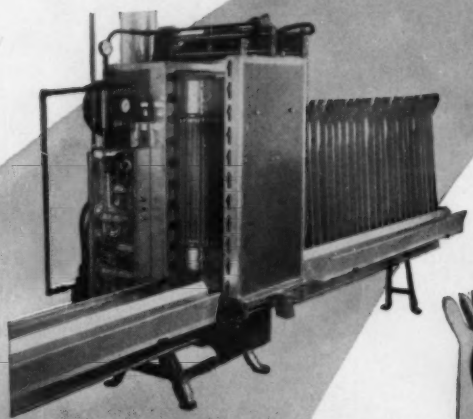
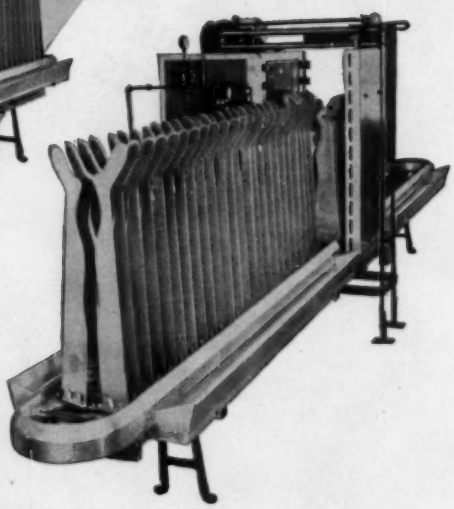
Turbo Push-Button Machines Stop Guesswork Heat-Setting

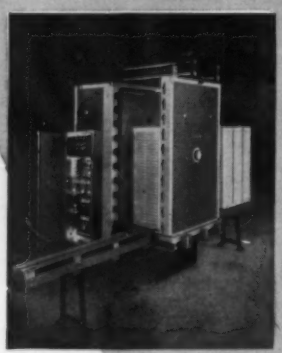




Above: Turbo ADS-48 Combination Preboarder/Finish Boarder, a single operator machine with 48 forms.

Right: Turbo ADS-96 Combination Preboarder/Finish Boarder, a two operator, double track machine with 96 forms . . . does the work of two preboarders and two finish boarders.

These hosiery setting machines with 4-cycle operation (preheating — air expulsion — steaming — drying) are designed for complete control of finishing according to the after-dyeing method of plasticizing all types of hosiery or garments.



Turbo FS-60 Fiber and Yarn Setter

Turbo FS-300 combination all-purpose Steam Setter adaptable to setting yarns, fibers, sweaters and other fabrics.

Turbo Setters feature automatic controls to assure high-quality results with every load. Available in stock machines or built to order.

Heat-setting can be tricky when it's done by "hand". But, when Turbo Automatic Push-Button Machines do the job your production will stay on schedule. Carriers, forms or trays move in and out of the setting chambers mechanically — automatically. Temperatures and timing are precisely controlled for each particular lot — there's no guesswork. With Turbo Automatic Push-Button Machines, you have quality control "under your thumb" at all times. Send for the 12-page Turbo Catalog — it gives complete data on a host of machines for anything that must be heat-set . . . or write us about your particular setting problem.

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TURBO MACHINE COMPANY
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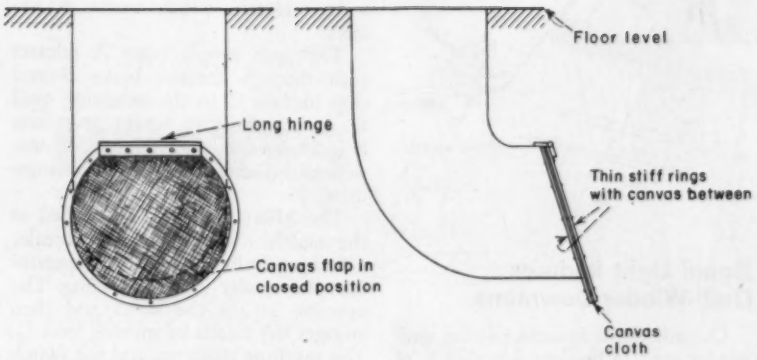
"Builders of Precision Machines for a Quarter Century"



Canvas Flap Stops Back Draft From Dust Room

When our feeder hoppers were shut down, back draft from the dust room used to blow waste into the cages and other parts of the machine. Eventually, thick pads of short fiber and trash would break loose and get into the work.

We stopped the trouble by flattening the top of the pipe from the exhaust fan and attaching a canvas flap to the mouth with a hinge. The flap is riveted between two light metal rings that serve as a frame and keep the cloth taut.

The mouth of the pipe is cut at an angle so that when the fan is not blowing, the flap will drop down of its own weight and close the opening.

The hinge and rings should be rustproof, and no oil should be put on the hinge. Graphite should be used as a lubricant.

The simple arrangement has saved us many hours of cleaning and much bad work. (K-3448) *T. K. Pattabhiram, India*

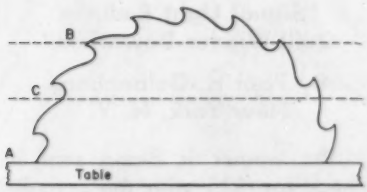


Table Saw Chips Plywood If Not Set Correctly

Circular saws with very fine teeth are recommended for cutting plywood. In a mill shop where plywood is used infrequently, it can be sawed with a regular table saw. The trick is to have the teeth cut the plywood at an angle that will not chip it.

We tried raising the saw fully, as shown at A in the sketch, and the saw chipped the underside of the plywood. At B, the top of the plywood was chipped because of the angle at which the teeth cut it.

A middle position of the saw, as shown at C, was found to be best. With the saw in this position, the plywood was cut smoothly without chipping. (K-3399) *Walter A. Simond, Washington, D. C.*

Nickel-Chrome Plating Reduces Drawing Troubles

We were bothered by sliver lapping up on the fluted back rolls of the can gill box when we ran fine wools through our Bradford-system worsted-drawing department.

When we examined the rolls, we found them to be rough and pitted. This trouble was traced to erosion caused by the wetting agents in the wool emulsion, which is applied at the can gill.

We had the back rolls removed and nickel-chrome plated. The calender rolls were also removed and made true on the lathe. Since we did this job, we have had no more trouble from lapping up; and our sliver improved because the plating removed any tendency toward fiber breakage or cutting between the rolls. (K-3489) *H. A. McLean, Bradford, England*

Filling Cabinets at Looms Make Bobbin Changing Easy

We weave carpets at our mills on both single- and double-shuttle looms. The filling in the shuttles is changed by hand.

So that weavers can change the filling with a minimum of reaching, we have built wooden filling cabinets for each loom.

The top of a cabinet is level with the loom shuttle box. The cabinet is divided into a lower and upper section by a shelf. A chute-like extension is made at the bottom of each division. Empty bobbins are dropped into the cabinet.

Filling for the looms is doffed into canvas baskets at filling winders, and the baskets are carried to the weave room and placed on top of the filling cabinets.

When the filling in a basket is used, the basket is removed and a full basket is easily put up. The cabinet is tilted to remove empty bobbins.

The cabinets are painted to blend with the color scheme of the building and are neat in appearance. (K-3509) *Belrug Mills, Inc., Greenville, S. C.*

June Prize-Winning Kink

The best Kink published in the June issue of TEXTILE WORLD, according to our reader-judges, was:

"Signal Light Reduces Quill-Winder Downtime"

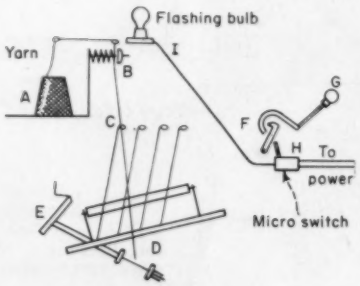
By Paul H. Goldenberg New York, N. Y.

The winner is being sent a check for $25 with the compliments of TEXTILE WORLD.

The prize-winning Kink is reprinted at the right.

Each month TEXTILE WORLD awards $25 to the submitter of the Kink judged by a panel of over 300 mill men as the best for that particular month. A new batch of Kinks appears each month, and a new group of readers acts as judges each month.

If you are asked to judge one of these days, be sure to help select the best Kink by sending back your answers in time for final tabulation. Closing date for judging is the last day of the month in which the Kink appears.



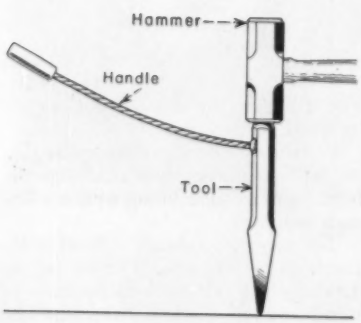
Signal Light Reduces Quill-Winder Downtime

Our automatic Hacoba parallel quill winder used to be shut down 25% of the time while the operator was attending to other duties. She could not tell when the machine knocked off unless she was watching it closely.

I solved the problem by installing a RW80BZ Micro switch on the winder clutch, which works as follows:

The yarn supply cone *A* releases yarn through tension brake *B* and stop motion *C* to the revolving quill *D*. When the yarn breaks, lever arm *E* is actuated by the stop-motion tension and disengages a clutch arrangement *F*.

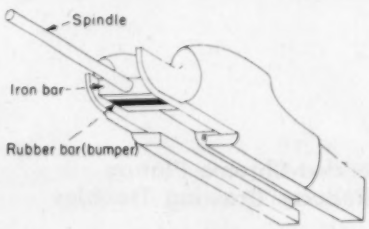
The Micro switch was installed at the clutch. When the yarn breaks, a flashing bulb *I* signals the operator that the winder is not operating. The operator repairs the break and then engages the clutch by moving lever *G*. The machine starts up, and the switch opens again. (K-3280) *Paul H. Goldenberg, New England Woven Label Corp., New York.*



Make This Holder For Impact Tools

Impact tools such as chisels or spikes are often used. When the tool is held by hand, the blow from the hammer gives the hand an unpleasant jar. Also, there is the danger of injury from a misdirected blow.

A piece of steel cable welded to the tool, as shown in the sketch, will provide a safe handle that will absorb most of the jar of impact. (K-3364) *Clifford T. Bower, London, England*



Modified Frogs Reduce Slam-Off Damage to Looms

We used to have many broken frogs caused by looms slamming off. Our looms have a knock-off spindle held in place by rubber bumpers that do little to lessen the shock of a slam-off.

To solve the problem, we took an iron bar that fits the front of the bumper and drilled a hole part way into it to hold the spindle. Behind this iron bar, we placed a rubber bar to act as a bumper and absorb the shock.

Now the frogs and looms are not damaged by slam-offs. (K-3283) *P. Silbermann, Haifa, Israel*

Wooden Plug in Picker Stops Split Laps at Cards

Picker laps gave us a bad time by splitting as they were fed into the cards. We tried to stop the trouble by winding roving ends into the finisher lap, but the roving did not stop the trouble.

We finally eliminated split laps by plugging the air vents in the bottom cage of the finisher picker so that the fan would draw cotton from the beater chamber to the top cage only.

Two wooden plugs with handles were made, and one was inserted in the vent. When we cut out the bottom air current, firm laps that do not split were produced. We also find that the system works well when we are running staple fiber. (K-3513) *T. K. Pattabhiram, Suterganj, Kanpur, India*

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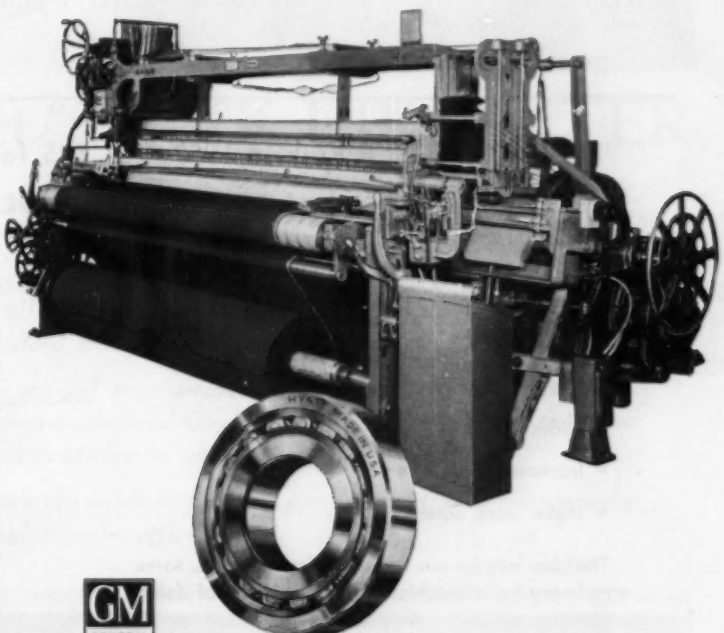
to do with

all this?

Critical Settings help win *Critical Approval!*

When glamorous models parade the latest creations of a famous couturier, both fashions and fabrics are critically scrutinized. Texture and finish are in the spotlight . . . helping to make or break the sale . . . depending on how well critical settings have been maintained!

Even if you don't loom fashion fabrics, *quality* is vital to your sales . . . and HYATT Hy-Roll Bearings are one of your surest safeguards of textile quality. Today's HYATTS are designed to maintain critical settings far more accurately and dependably than ordinary bearings. Remember, too, HYATTS can save you up to 90% on lubrication . . . up to 40% on power . . . positively prevent oil splatters. *Be sure to specify HYATT Hy-Roll Bearings on all your new or modernized machines—it pays!* Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.



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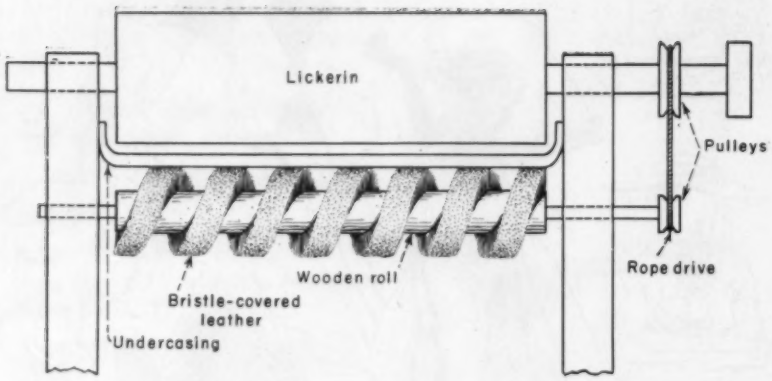


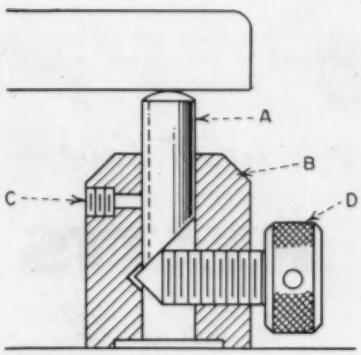
Stripper Under Lickerin Takes Out Loose Trash

Leaf and seed particles and short fibers that fall through the grid beneath the lickerin used to be pulled into our cards by the draft caused by the high surface speed of the lickerin. There is nothing at this point to catch the trash, which can cause a lot of neps to form in the web.

We overcame the trouble by building a wooden stripper and covering it with a leather spiral onto which bristles were fastened. The stripper, which revolves slowly beneath the lickerin undercasing, resembles a flat cleaning brush.

The brush is driven by a rope and pulley from the lickerin and is adjusted by an adjusting screw at either end of the shaft.

As the trash trickles through the grids in the undercasing, it is brushed down by the mild action of the bristles and not sucked back into the work. The brush has greatly improved our yarn quality. (K-3442) *I. J. Abraham, India*



How To Make Small Jacks For Light Lifting

A set of jacks suitable for positioning light material for pattern layout in maintenance shops is shown in the sketch. These jacks can be made as follows:

Make the plunger *A* from a hardened pin with the lower end flattened diagonally so that it slides vertically in the jack housing *B*. A slot cut in one side of the plunger is engaged by the guide pin *C*. The plunger is raised by turning adjusting screw *D*. The adjusting screw has a 90° point and is hardened and polished. (K-3348) *Clifford T. Bower, London, England*

$500 for Best Kink in 1957 - - - $25 for Best Kink Each Month

Plus $5 to $10 for Every Kink Accepted

What Is a Kink?

Any idea that will

- Cut costs
- Improve quality
- Reduce work
- Increase production
- Make work easier

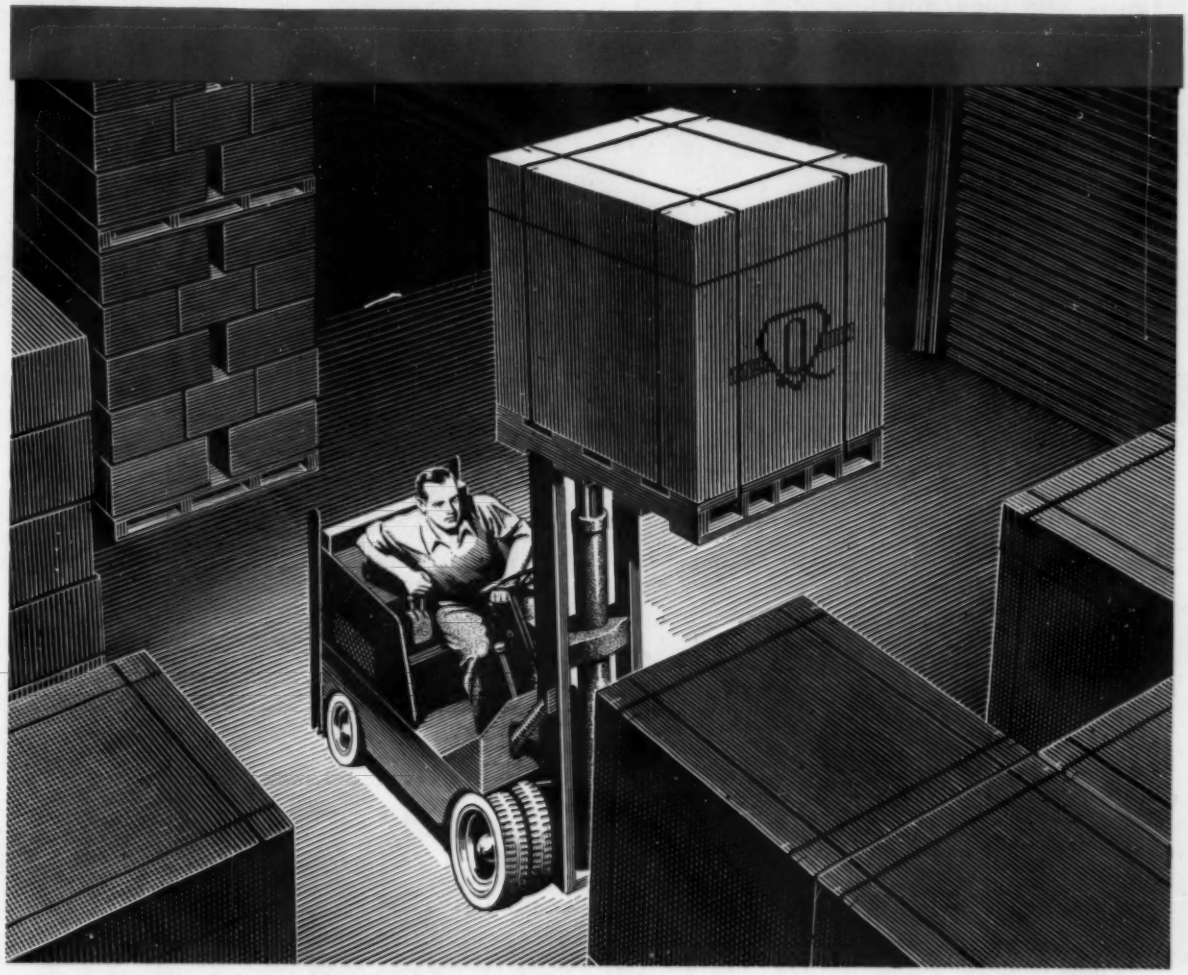
The idea may be one for improving machines, some attachment for a machine, a short-cut way of doing something, a labor-saving device—any idea at all that helps a mill man run his job better or easier.

Send in your Kink now. There is always a contest going on.

RULES OF CONTEST

1. No limit to number of entries.
2. New $25 prize contest every month, $500 prize contest for the year. Monthly contest confined to Kinks published that month, yearly to those published in calendar year 1957.
3. All Kinks paid for on acceptance; extra payment for photographs. Drawings need not be finished (clear detailed pencil sketches will do).
4. Previously published material not eligible for prizes.
5. Unless you advise to contrary, we assume we may sign your name to Kink when published.
6. Prize winners will be selected by readers, a different group each time. At least 300 will be asked to select preferred Kinks in each issue. Their votes will select the best Kinks, and their decision will be final. In cases of ties, duplicate prizes will be awarded.

Send Kinks to:
KINKS CONTEST, TEXTILE WORLD
201 E. Coffee St., Greenville, S. C.



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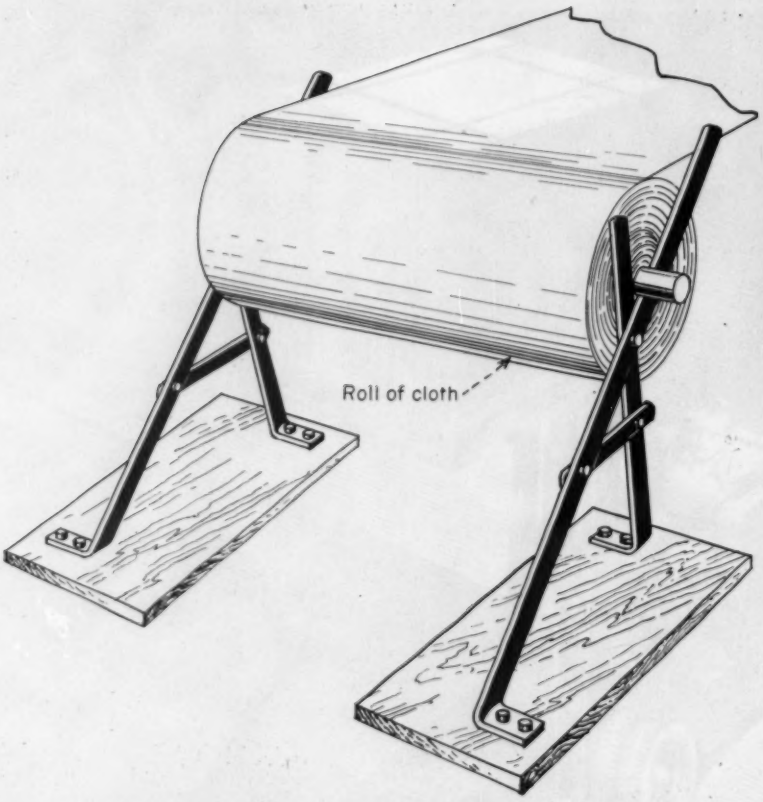
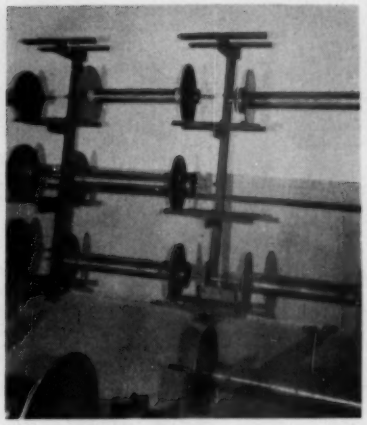


Stands Made of Bar Stock Support Cloth Rolls

Stands to support rolls of cloth can be made easily from flat bar stock and wooden blocks. These stands are portable and can be moved easily.

Cut the bar stock and assemble the stand as shown in the sketch. Bolt the legs to wooden blocks so that the stands can be adjusted to the width of the material. When they are not in use, these stands require little room. (K-3282) *Chas. H. Willey, Penacook, N. H.*



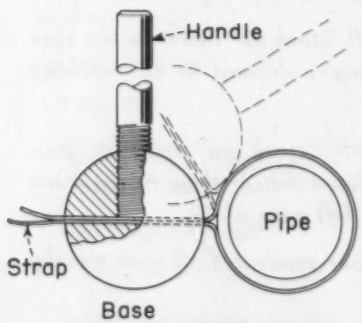
Rack in Slasher Room Stores 36 Empty Yarn Beams

We recently built a new slasher room as part of a mill-expansion program. Along with the new building, we designed a new rack to store empty yarn beams for looms.

The storage rack is made from angle-iron cross girders welded to upright angle-iron beams as shown in the photograph. The rack is 60 ft. long, and four racks hold all our extra beams.

The rack holds four tiers of empty beams; and 36 beams 68 to 72 ins. long can be stored at once.

The rack is against a wall and completely out of the way. However, because of the lightweight construction, we do not store beams filled with yarn on it. (K-3511) *Schwarzenbach Huber Co., Altoona, Pa.*



Make This Pipe Wrench

When you are tightening chrome, stainless-steel, or aluminum pipe, the ordinary pipe wrench will scratch or damage the pipe. A wrench that will effectively turn any kind of pipe without damage can be made easily in the machine shop from parts on hand.

Parts needed are: steel rod 1 in. in diameter and 3 ft. long, threaded at one end for a handle; a piece of steel shaft 3 or 4 ins. in diameter and about 2 ins. thick, with a hole drilled and threaded half way through to take the steel rod handle and a slot machined through at right angles to the handle for a base; a piece of flexible steel strapping about ¾ in. wide and 2 ft. long. Assemble as shown.

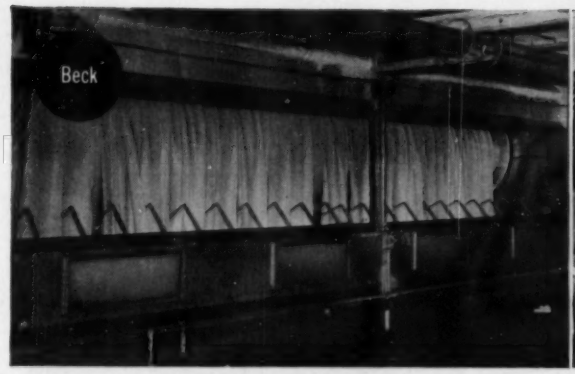
To use the wrench, insert the strap in the hole in the wrench base, wrap it around the pipe to be turned, and then pass the end back through the hole. Move the base snugly against the pipe and secure the strap by tightening the handle in the base. The pipe can then be turned in either direction. (K-3486) *H. J. Haas, Martinsburg, W. Va.*

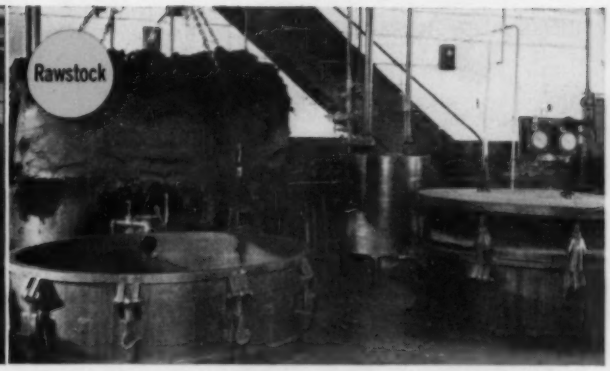
How To Keep Picot Bars From Sticking

Knitters in our full-fashioned knitting department are responsible for oiling the upper portion of their machines. Many sets of stockings have been spoiled in the past because knitters did not oil the shifting rod of the picot bars regularly.

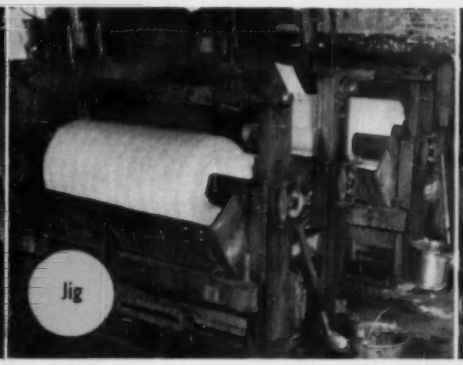
We solved this problem by providing each knitter with a plastic bottle with a screw top. To keep knitters conscious of their responsibility, we collect these bottles regularly and fill them up and return them to the knitter.

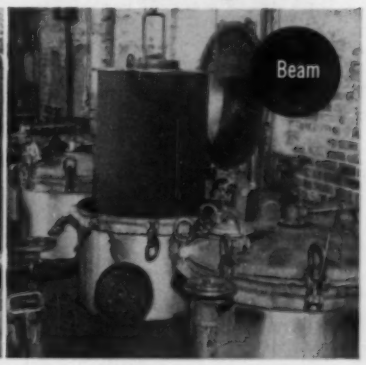
This system keeps reminding the knitters to oil picot rods, and we don't hear about sticking picot rods any more. (K-3394) *W. E. Peeples, Gainesville, Ga.*



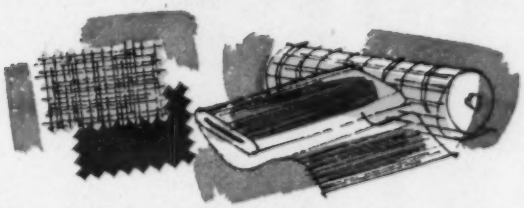


Whenever an all sodium salt* is required for dyeing...





Use MORTON Chemical Grade '999' Salt



*Morton 'Chemical Grade 999' is the all sodium salt (sodium chloride and a trace of sodium sulphate). It contains no calcium compounds that can cause cut threads, off-shading, and costly shutdowns.

Morton 'Chemical Grade 999' Salt can help you to get softer finishes, more even shades, greater color intensity. That's because Morton 'Chemical Grade 999' is a low cost, high purity evaporated salt, free of objectionable calcium and magnesium compounds.

Morton 'Chemical Grade 999' is more than 99.9% pure sodium chloride, recommended for use whenever commercial calcium-free salt is required.

Available in 100-lb. bags or bulk, 'Chemical Grade 999' is specifically recommended when direct salting is used in dyeing rawstock, package, beam, beck or jig with either sulphur, direct, or naphthol dyes.

☐ Please send me more information about Morton 'Chemical Grade 999' Salt.

☐ I would also like to know how much I can reduce calcium and magnesium content by using Morton 'Chemical Grade 999' Salt. Please have a Morton Brine Engineer call on me to explain the benefits of using 'Chemical Grade 999' Salt.

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Company_____

Street Address_____

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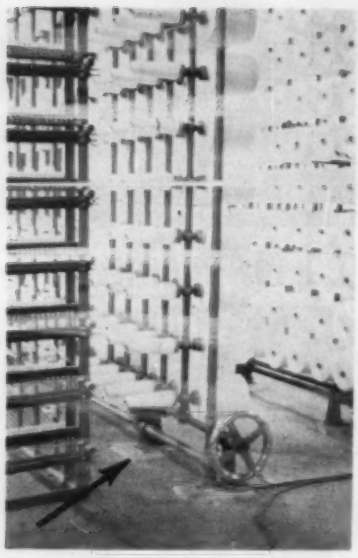
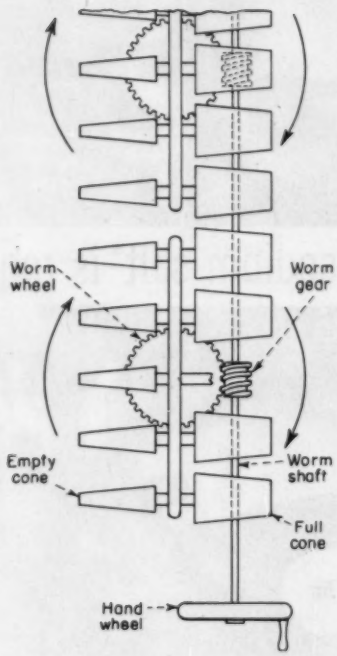
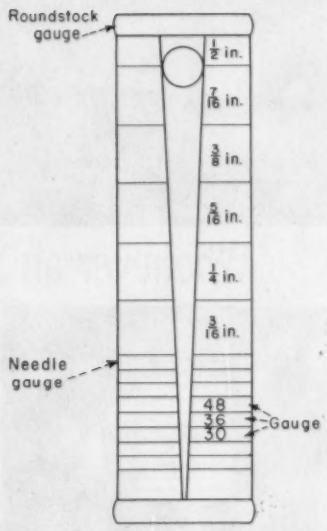




Worm Gear and Shaft Rotate Warper Creels

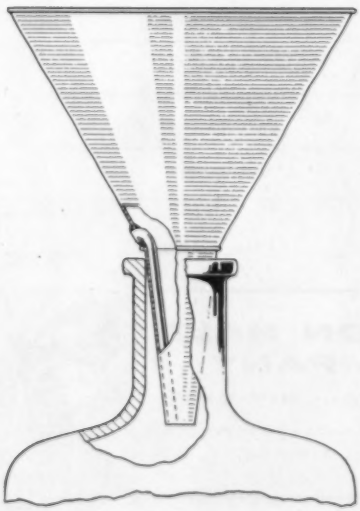
In our rayon-warping department, we use rotating magazine creels with five spindles to the section. Formerly, we rotated the sections by hand after the cones were empty. The method was slow and inefficient.

To speed up the operation, we rigged up a long shaft with a worm gear and wheel (arrow) for each five-spindle section and installed it at the bottom of the creel as shown in the photo. A hand wheel at the end of the shaft makes it easy for one man to rotate 150 spindles at a time. Diagram shows how the rotating mechanism works. (K-3468) *Hokao, Fukaya, Japan*



Round Stock and Needles Are Checked With This Gauge

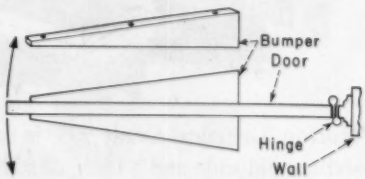
A handy gauge for checking both round stock and knitting needles can be made as shown in the sketch. The gauge is made from sheet steel or other rigid metal or plastic. (K-3456) *H. J. Haas, Martinsburg, W. Va.*



Make Funnel Spillproof By Providing an Airhole

By providing a means for air to escape from the container being filled, you can speed up liquid transfer through a funnel to a bottle.

Modify any regular metal funnel as shown in the sketch by soldering a small tube to the inside of the delivery leg of the funnel. The tube should extend the full length of the leg and be brought out at a point above the normal resting place of the funnel when it is in use. (K-3521) *T. K. Pattabhiram, India*

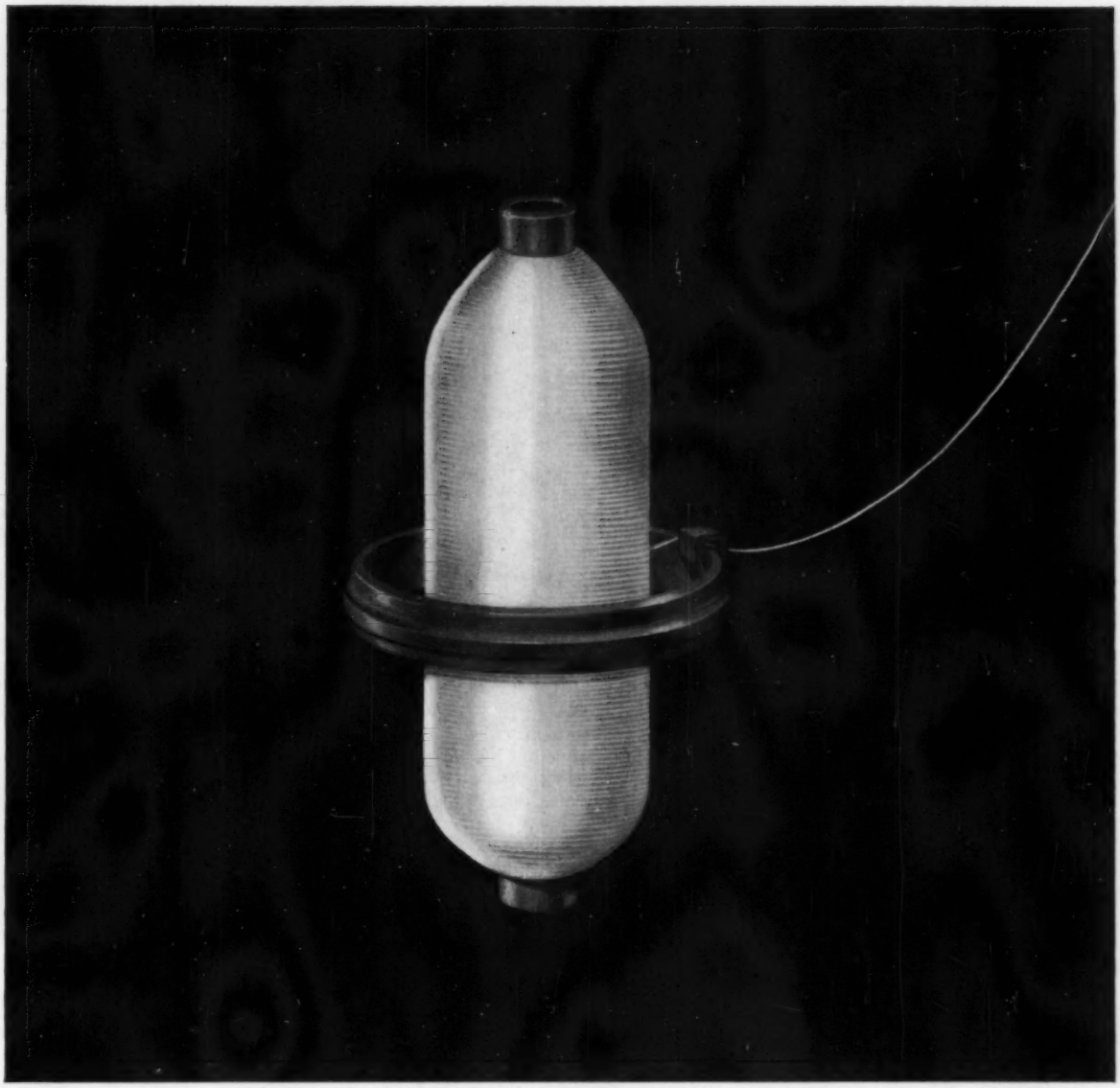


Protect Swinging Doors With Tapered Bumpers

Swinging doors in the mill are often damaged by being pushed open with boxes and trucks. Tabered bumpers made of wood will protect the doors.

Attach the bumper with screws on both sides of the door. The small end of the bumper should be near the outer edge of the door and the large end near the hinge side.

The bumpers will not only protect the door from bumps and scars, but the tapered edges will also slow the movement of opening and closing and prevent damage to the hinges. (K-3386)



reduce wear, lengthen life of spindle bearings

Spinesso is a premium-grade lubricating oil for both spinning and twister spindle bearings. Its exceptionally high oxidation stability affords maximum bearing protection – and extends the time between lubrications considerably. Spinesso's high resistance to oxidation inhibits the formation of dark, sludge-like deposits that cause friction in the bolster – and stain yarn.

Spinesso is specially processed to provide an extra measure of protection against wear and to materially reduce rusting and pitting. Thus the problems most frequently encountered in high-speed bearing operations in humid textile mill atmospheres are minimized. Spinesso gives positive protection at all times – even at start-up when immediate and effective lubrication is essential.

Textile mills that have switched to Spinesso report *cleaner, longer-lasting spindle bolsters and blades—with less frequent lubrication.*

Spinesso is available in *three* viscosity grades. Get the whole story on this fine product . . . contact your nearest Esso Standard Oil Co. Division Office: Boston; Pelham, N. Y.; Elizabeth, N. J.; Bala-Cynwyd, Pa.; Baltimore; Richmond; Charlotte; Columbia, S. C.; Memphis; New Orleans.

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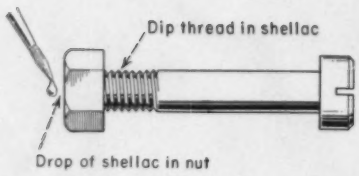
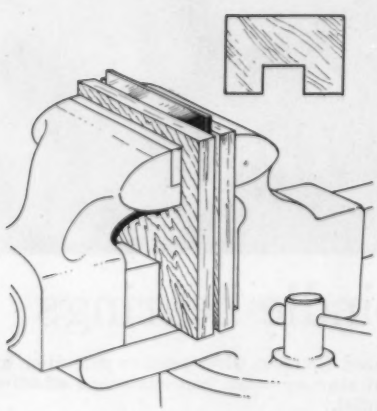


Use Shellac To Keep Shuttle Nuts Tight

For small nuts used in shuttles and on certain parts of quillers and other machinery, a small amount of shellac will prevent loosening caused by vibration. The shellac will not stick too tight to be loosened with a wrench or screwdriver.

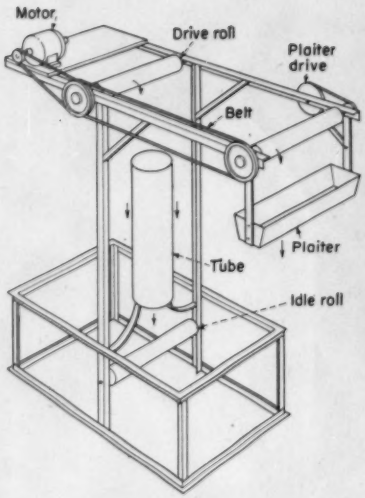
Dip the threaded end of the bolt into the shellac before the nut is placed on it. Sometimes it is desirable to drop a small amount of shellac into the nut after it is started on the bolt. (K-2925) *Arthur Abbott, Berwick, Pa.*



Wooden Jaw Surfaces Protect Material in Vise

When you are holding soft metal, plastics, and similar material in a vise, the jaws of the vise will sometimes damage the material. To provide non-scarring jaw surfaces, make two auxiliary clamps from wood, as shown in the sketch.

The notches cut in the wooden blocks fit over the square ram of the vise and hold the blocks parallel to the jaws of the vise. (K-3365) *Clifford T. Bower, London, England*



How To Turn Circular Fabrics

Many tubular knitted fabrics require turning inside out for such processes as napping or brushing. You can build a machine that does this job easily and quickly.

Make the frame from angle iron and fasten a tube, preferably made from brass, in a vertical position. Erect a roll above the tube and drive this roll from a 1-hp. motor. Position an idle roll below the fabric tube.

Drive a third roll installed on a bracket that is level with the first roll. Hang a plaiting attachment below the third roll.

Thread the fabric over the first roll and down over the outside of the tube. When the complete piece of fabric is on the tube, thread the fabric through the tube from the top, as shown by the arrows, and pull it under the idle roll and over the third driven roll and drop it in the plaiter.

Push a truck under the plaiter and start the motor. Casters can be attached to the frame so the unit can be moved easily. (K-3306)

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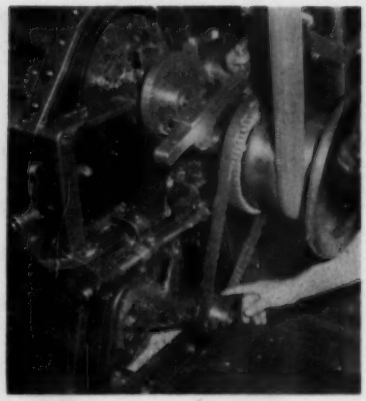
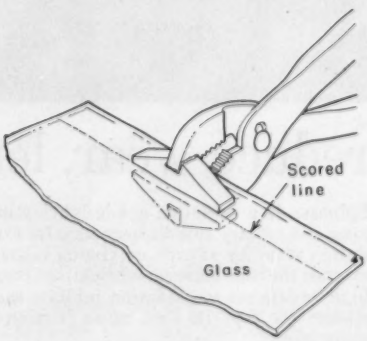


Notched Pulley Keeps Timer Belt from Slipping

The timer belt on our Naismith combers used to slip when the machines were started or stopped. This action caused bad work and unevenness.

We solved the problem by securing a special belt with grooves and cutting teeth in the pulley to fit the belt grooves. The belt no longer slips, and our variation dropped to 13%. (K-3516) *Falls Mfg. Co., Granite Falls, N. C.*

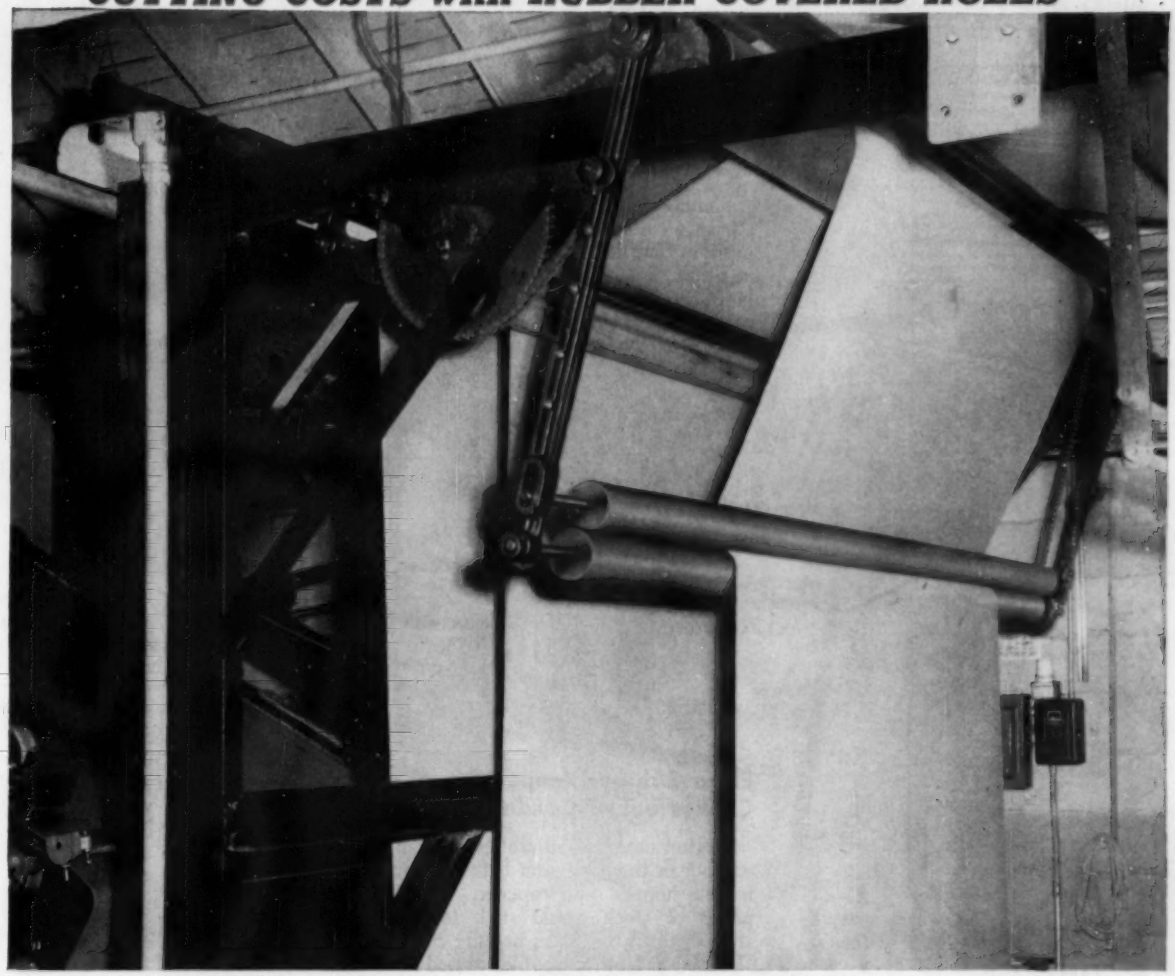


Wide Plier Jaws Are Useful For Breaking Glass

A set of jaws attached to regular pliers, as shown in the sketch, is useful for breaking glass and bending thin metal.

The auxiliary jaws can be made of cold-rolled steel or other easily worked metal and attached with rivets or by welding or brazing. (K-3345) *C. H. Willey, Penacook, N. H.*

CUTTING COSTS with RUBBER COVERED ROLLS



RUBBER COVERED PLAITER ROLLS PROTECT FINE FABRICS

Stowe-Woodward rubber covered rolls installed in plaiters perform consistently, if unspectacularly in protecting the quality of goods in process.

In replacing wooden rolls at the plaiter, carefully selected rubber rolls give a delicate yet positive delivery of goods, with uniform full-width tension. "Beating" and other marking is eliminated, as are the "hidden" costs involved in lapping and excessive mechanical maintenance due to vibration. Another benefit in many mills is the elimination of irritating noise common where wooden rolls are used. Ask your Stowe-Woodward Sales Engineer about the many ways in which Stowe-Woodward Rubber Covered Rolls can help to cut costs and improve quality in your mill.

Complete roll processing plants at:
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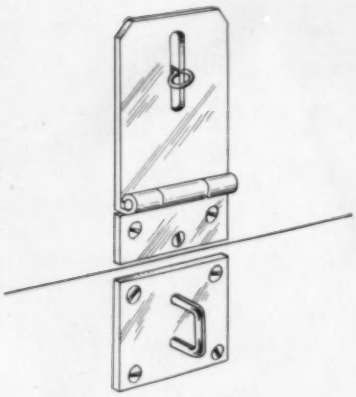
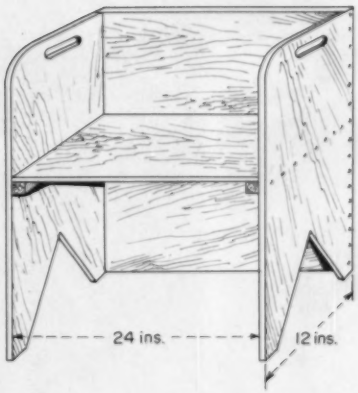


Hold Hasp Open With an Eye Screw

Sometimes it is necessary to keep a hasp open but the hasp is in such a position that the hinged end falls back in place. A small eye screw above the hasp, as shown in the sketch, can be used to lock the end in place. To lock, give the screw a quarter turn. (K-3150)

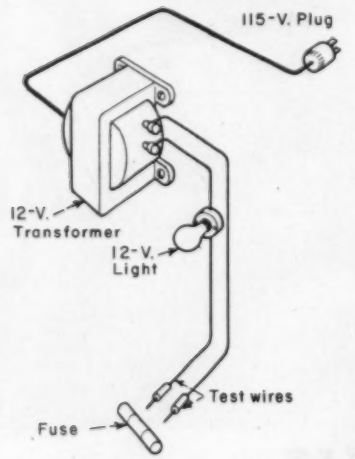


Workers' Seat Also Serves As a Table

There are many jobs in our mill that allow operators to sit down at their work. We made special seats for these workers that can also be used to stack goods in process.

The seats are made from 1-in. plywood, and the back rest is a five-ply board. The sides are 30 ins. high and 12 ins. wide. The seat is 24 ins. long, but you can make it wider if necessary.

Grooves are cut in the sides near the top so that the seat can be lifted easily and moved to a different location. (K-3351)

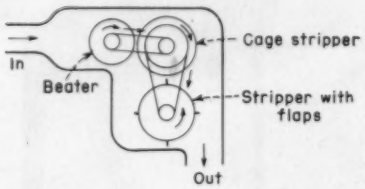


Check Fuses and Electrodes With This Handy Tester

We formerly used a storage battery to test fuses and electrodes. Often this battery would need recharging or would be in some other part of the plant when it was needed for testing purposes.

To overcome the trouble, we fastened a 12-v. transformer to the wall near the workbench and plugged it into a 115-v. outlet. Two test wires were hooked to the transformer, one of which was relayed through a lamp socket. A 12-v. lamp was screwed into the socket.

When a fuse is to be tested, we touch the test wires to the ends of the fuse. If the fuse is good, the lamp will light. If the test wires are touched to the center bar and to the outside cover of an electrode and the lamp burns, it shows that the insulation is bad. The electrodes should be discarded. (K-3388) *James Clapp, Jr., Philadelphia, Pa.*



Extra Stripper Keeps Chokes out of Condenser

Cotton used to curl around the fan stripper in the condenser between our feeder hopper and opener. Small pieces of stock would stick to the stripper until the fibers became curly. We also had other troubles caused by cotton sticking to the sides and edges of the stripper.

We overcame all these troubles by installing a second stripper beneath the cage stripper. Flaps were put on the striking edges of the second stripper to knock down the cotton that stuck to the first stripper. The second stripper revolves in the opposite direction to the first stripper.

The arrangement has improved cleaning and eliminated curly cotton and damaged fibers. Chokes no longer occur, since the cotton is kept well away from the direct action of the fan. (K-3438) *I. J. Abraham, India*

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Send in your Kink now.

Here's a Simple System To Prevent Card Damage

Four men act as a team to do the stripping of our wool cards. After each card has been stripped, there's always the danger that some tools will be left on the machine. This forgetfulness can be the cause of serious trouble when the card is restarted.

Here's the system we use to keep from having accidents:

Each set of stripper's tools is numbered to identify it with its owner. Each card stripper is responsible for his own tools.

A rack that holds the full complement of stripper's tools is fastened beneath the starter button of each electric motor.

One man is responsible for starting the card after stripping. He must see that all tools are in the rack before the machine is started. (K-3454) *H. A. McLean, Bradford, England*

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Seamless Mills that GROW — Go FIDELITY*

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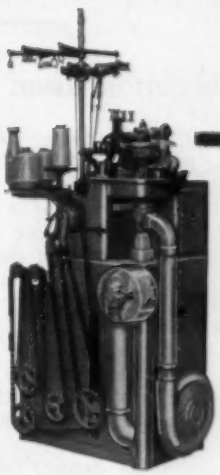

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BOILER-TUBE MAINTENANCE

CONTINUED FROM PAGE 117

panded, it may be necessary to machine off all or part of the tube end projecting from the tube sheet. Tools for this job are: (1) a flat-type end-facing tool that shortens the tube by making a square edge, and (2) a radius-facing tool that shortens the tube end and provides a slight radius on both the inside and outside edges of the tube.

Where flow turbulence is a problem, the tube ends are often flared. This operation is done on the projecting end of the tube outside of the tube sheet or in part of the tube-sheet hole that has been chamfered with a radius-cutting tool.

Flaring can be done in one step with a flaring tool alone, or it may be followed with a beading tool for a beaded finish. The flaring tool is tapered to flare the tube by a blow from a mallet or air gun. The flaring tool works similarly but pushes the projecting flared ends completely back to the tube sheet.

At the end of the necessary expanding and finishing operations, a pressure test assures fitting. When a tube shows leakage, rerolling is necessary. However, the amount of expansion should be kept to a minimum to prevent over-rolling.

MATERIALS-HANDLING SYSTEM

CONTINUED FROM PAGE 81

dling equipment and packaging supplies are purchased through your engineer. Avoid purchasing excessively large quantities of equipment and materials that may become obsolete through changes in materials and packaging techniques.

In setting up your materials-handling program, plan ahead at least five years. Analyze each system by breaking down your handling cost to show (1) the actual indirect labor cost and (2) the indirect labor cost that is included many times in the direct labor cost for production operation.

Start your program by selecting materials-handling problems in your plant where large savings can be made by installing a new method or system. Make up flow process charts on how your present system operates, and list your indirect labor cost.

When the flow chart is completed, prepare your proposed system with detailed information on: (1) the operation of the new system, (2) equipment required, and (3) savings involved. With this method, you will have complete details of the savings to be made by installing your new system.

After your new system is installed, go over your program with your methods and timestudy departments for possibilities of installing incentive systems to your indirect labor operations. The incentive system is another source of additional savings in your cost-reduction program.

Write standard operating procedures for each system or department to insure that there is no misunderstanding in the operation of the system.

There are several ways you can keep informed of progress in handling and packaging to be sure you are maintaining the best system in your planning and organizing.

You should join one or more of the materials-handling organizations in your vicinity. Visit other plants to see equipment of all types. Read the magazines that discuss the latest ideas and systems developed for handling all types of materials and products.

Call in representatives of manufacturers of materials-handling equipment and packaging materials and discuss your problems with them. They will be of help to you in developing your system.

Another source of information is colleges that have night courses and seminars on materials handling and packaging.

DACRON-COTTON BLENDS

CONTINUED FROM PAGE 103

component, the following reducing-oxidizing treatment will strip off some of the disperse color dyed by the Thermosol process, making it difficult to control shade or produce satisfactory washfastness. Pastel shades requiring up to 1 oz. per gal. of vat dye can be produced with little or no color reduction of the Dacron component.

Heat-setting Dacron-cotton blends does not noticeably affect the dyeability of the Dacron when the Thermosol process is used.

For Thermosol dyeing, the fabric should be prepared so that it will wet out instantaneously in the pad.

The pad bath is prepared by dispersing the required dye with 1 oz. per gal. of Compound 8-S and the bath is then diluted to about ½ the desired volume with hot water. The dispersion is screened and put through a colloid mill; then 0.15 oz. per gal. of Keltex and 0.30 oz. per gal. Alkanol WXN are added, and the bath is made up to volume with water.

The fabric is padded through this liquor at 120° F. and partially dried to contain 25% water on a tenter set at about 1 in. over the desired finished width.

The goods are then heat treated at 400 to 450° F. for 15 to 60 secs.; the lower temperature requires the longer time.

The cotton may then be dyed by the conventional pigment-pad continuous method or other procedures.

Equipment for heat-setting may be a roller-type oven, a resin-curing oven, or infrared units capable of producing the required cloth temperature. Tenters are not recommended because the clips generally leave marks on the selvages.

Small designs can be printed with vat dyes successfully by the potash-sulfoxylate method, but large blotches do not cover well. Resin-bonded pigments are satisfactory in light to medium shades for large printed areas, but fastness decreases on dark shades.

Mixtures of vat and disperse dyes can be printed on, dried, and subjected to hot air at 415 to 435° F. for 30 to 90 secs. The goods are padded with caustic and hydro and steamed for 30 secs. and soaped.

Although the disperse colors are not affected by the reducing-ozidizing bath, the method is not entirely satisfactory as regards sublimation and efficient disperse-dye transfer from the print-paste thickener. Modifications in the print paste and momentary exposure to temperatures as high as 1,200° F. have shown promising results in laboratory trials.

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PATENTED CONSTRUCTION!

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DROP BOX
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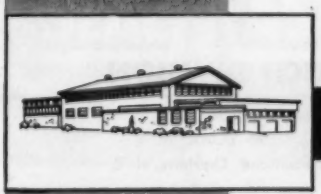

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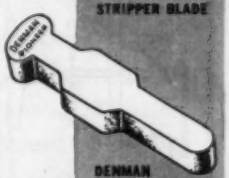

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Denman's Drop Box picker construction eliminates the weak spots in other pickers.

The insertion of the patented wedge provides a strong, smoothly tapered web, completely free from wrinkles. This exclusive feature also eliminates the resin-leak into the picker stick aperture. This leak often forms rough spots in other pickers which abrade and wear the picker stick.

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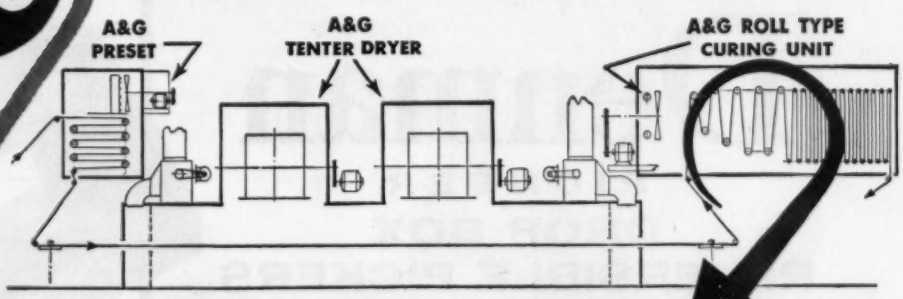
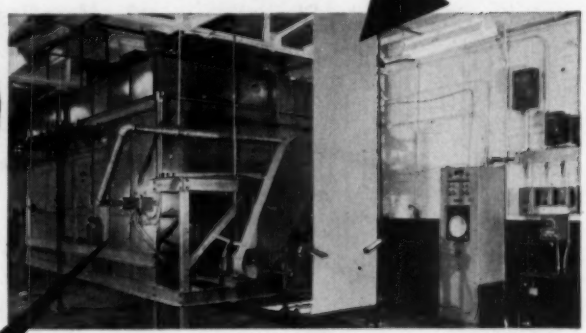
The A&G Resin Finishing Range

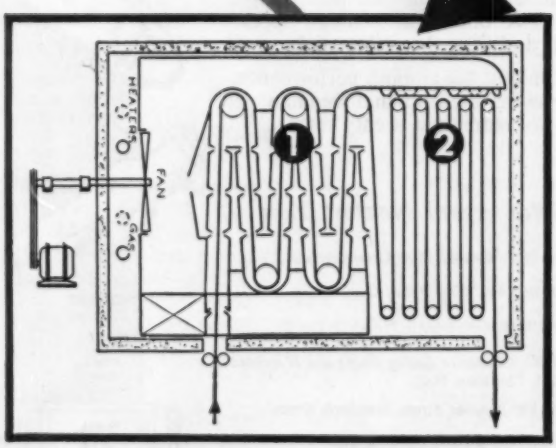


AN EVEN CURE

A SUPERIOR HAND

WRINKLE FREE





Study this A&G CURING UNIT. Note the dual zoning.

1. *Heat Up* Zone where the goods are brought up to the curing temperature quickly yet evenly. The resulting hand is superior. The cloth is in the A&G Curing Unit a shorter time, resulting in a superior hand and minimizing losses in tensile strength.

2. *Hold* Zone where the goods are subjected to the proper curing temperature for the proper length of time. Uniform temperature with maximum cloth capacity results in effective curing combined with maximum yardage per minute.

The A&G Free-Wheeling Drive eliminates wrinkle problems and minimizes width loss with trouble-free pneumatic or mechanical clutches on all top rolls.

The A&G Resin Curing Unit has made an outstanding record in many mills, both as part of the complete A&G Finishing Range and as individual units. Its efficiency and productive capacity are so outstanding that you should consider it strongly for your *next* installation . . . as a modernization unit or for your expansion program.

A&G Units Include: Tenter Dryers, Predryers, Dye Range Dryers, Skein Dryers, Loop Dryers, Warp Dryers, Stock Dryers, Resin Curing Units, Cloth Conditioners, Carpet Dryers.

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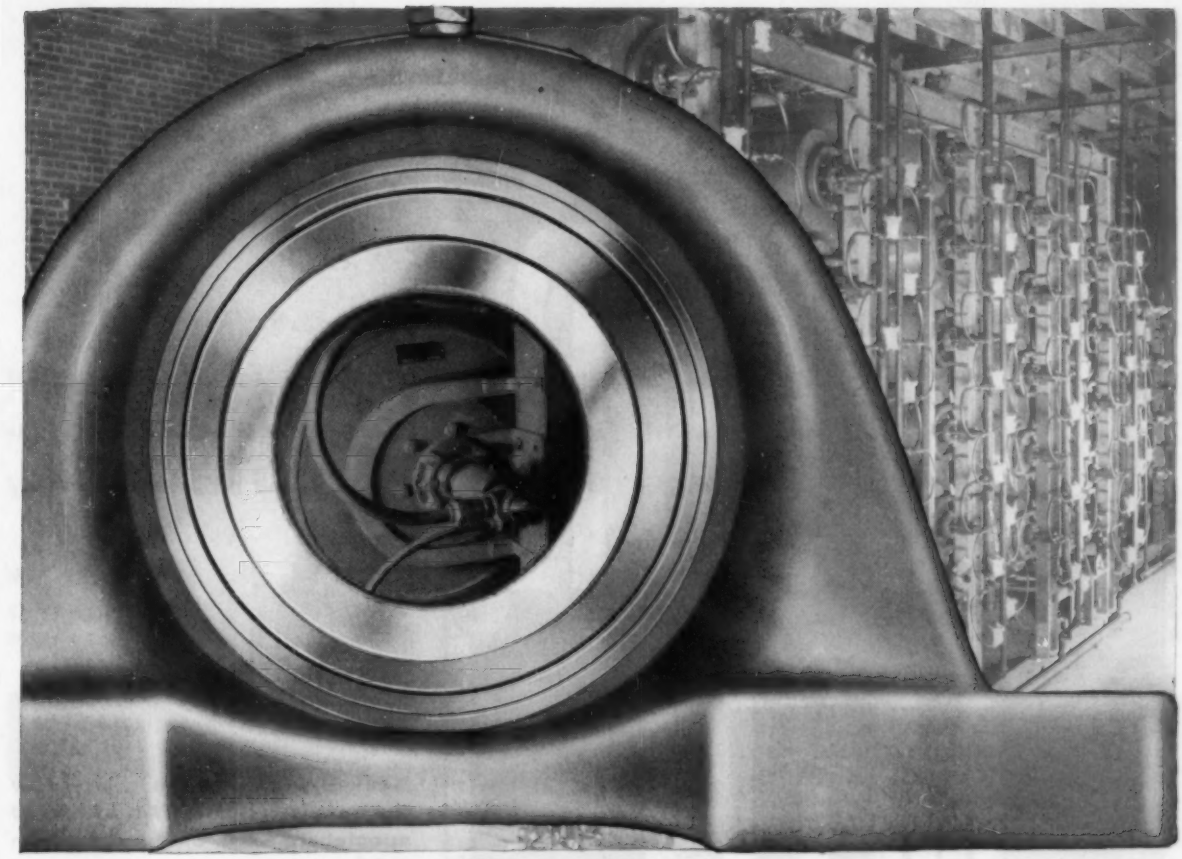

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Performance originates on the drawing board, as your own engineers will tell you. It's the engineering that's built into a product that makes it outperform.

In today's highly competitive textile market, efficient high speed production is essential. Efficient production is largely a matter of efficient machines. Machinery, on the other hand, is no more efficient than the smallest component.

SEALMASTER Ball Bearing Units with their exclusive combination of engineering features are built to outperform—the kind of quality you'll find well worth looking into.

Consult a SEALMASTER factory representative or distributor soon.

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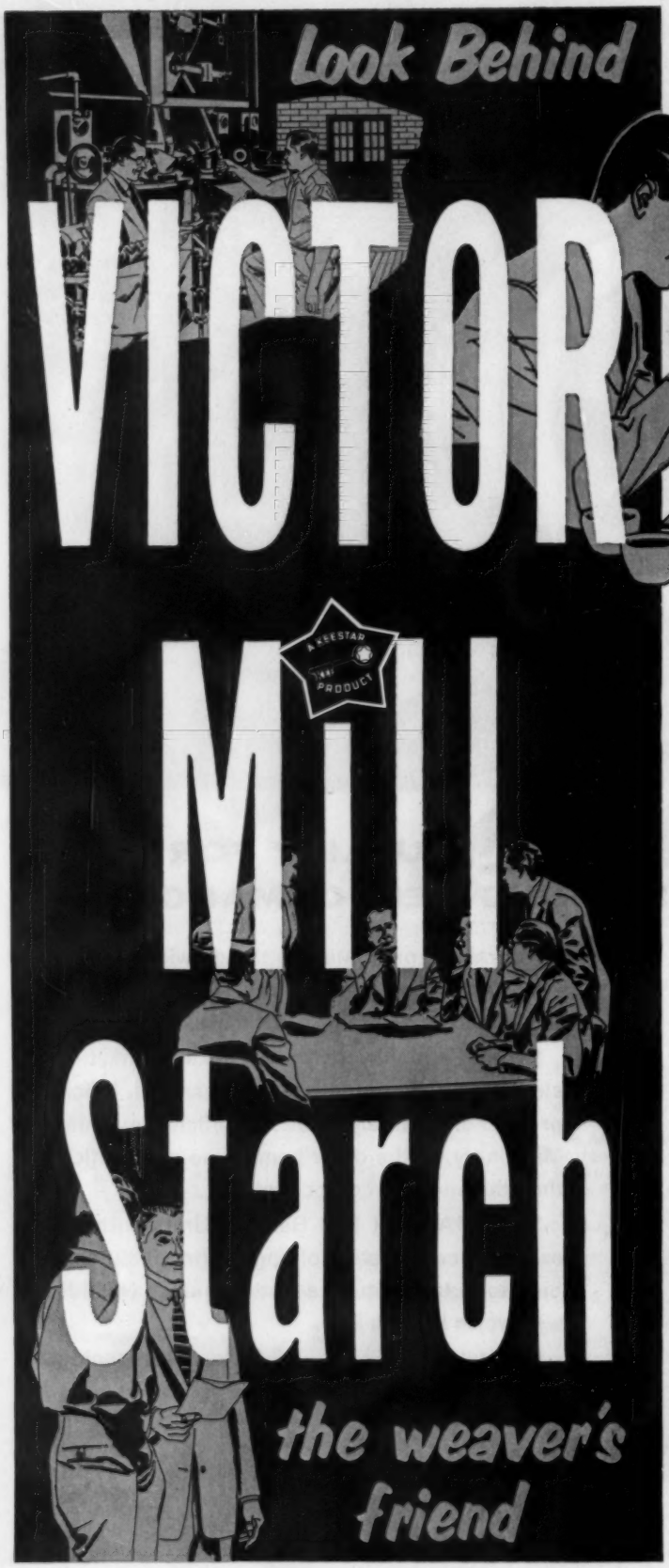

Many Minds Are Better Than One

Keever sales-service men know the textile industry. As a trained specialist, each on his own can help you solve most common mill problems.

But the Keever man never works alone. Your success has built our business. That's why all customer problems are thoroughly discussed in staff meetings.

If an answer is hard to find, the combined contact experience of more than 120 years is focused on it – backed by top laboratory technicians in the Keever plant – and in the field.

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Outstanding NEW LITERATURE *Free for the Asking*

NO REPEATS . . . Listed here for August are current bulletins reviewed by the editors of TEXTILE WORLD. To get the ones you need, circle the number on the Reader-Service card, as described on the preceding page.

TEXTILE MACHINERY & AUXILIARY EQUIPMENT

V-bed flat-knitting machine—For collars, cuffs, waistbands; single or double feed, produces plain or striped ribs. Dubied Machinery Co. **(F-1)**

Embroidering machine—Applies decoration by embroidery to garments. Available with up to 8 heads, various stitch fields. Robert Reiner, Inc. **(F-2)**

Sectional warper — For two 21-in. beams or one 42-in. beam. Models for 14- or 21-in. flanges; carries up to 32-in. beams. Automatic doffing. Robert Reiner, Inc. **(F-3)**

Jacquard knitting machine—For flat-knit production; many pattern possibilities; knits 60-in.-wide goods. H. Stoll & Co. **(F-4)**

Waste puller—For heavy-duty carding of materials going into wiping waste, car-box packing, and similar products. Proctor & Schwartz, Inc. **(F-5)**

Sifting screen—For reclaiming usable fiber from dust and waste systems. Separates dirt from fiber. Proctor & Schwartz, Inc. **(F-6)**

Drying systems—Designed for drying and curing heavy textiles. Coating machines also listed in brochure from Dalton Sheet Metal Co. **(F-7)**

Screen-printing machine — Automatic production of up to 10 colors. Elmo International. **(F-8)**

Pile-fabric finisher—For high-pile fabrics made of synthetic fibers. Turbo Machine Co. **(F-9)**

Bar-tacking machine—Over 100 bar-tacking patterns illustrated in booklet describing the Pfaff 3334 machine, from Willcox & Gibbs Sewing Machine Co. **(F-10)**

Preboarding machine — For women's nylon hosiery; features automatic control of variable steam pressure and cycles. Girland Engineering Co. Ltd. **(F-11)**

Wrapping machinery—Automatic wrapping machines for textile items. Hayssen Mfg. Co. **(F-12)**

Course counter — Mechanical aid to quick, accurate counting of courses in knitted fabrics, all gauges. Marvel Specialty Co., Inc. **(F-13)**

SUPPLIES & CHEMICALS

Floor-maintenance guide — Brochure lists four steps in plant-floor maintenance; suggests necessary materials to get good results. U. S. Sanitary Specialties Corp. **(F-14)**

Impervious graphite — Resin-impregnated graphite, suitable cements described in Cat. S5050, which also lists corrosive materials easily stored or worked in impervious graphite. National Carbon Co. **(F-15)**

Isolation chamber—For handling radio-

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active, toxic, and other materials in plant laboratories. Described in Bulletin FS-267. Fisher Scientific Co. (F-16)

Filter paper—For gases, liquids, solids; plant and laboratory purposes. Cat. 357 from Eaton-Dikeman Co. (F-17)

MAINTENANCE & ENGINEERING

Boiler-pump seals — For feed-water pumps, others, listed in Form S-230 from Crane Packing Co. (F-18)

Stokers—For plant boilers, with combustion controls; various models described in Bulletin 456 from Canton Stoker Corp. (F-19)

Machinists' guide—Handy slide chart shows how to handle various stainless steels in many shop operations. Carpenter Steel Co. (F-20)

Stainless steel — Listings of various sheet and strip forms of stainless steel in several formulas for different uses. Form SS-38. Allegheny Ludlum Steel Corp. (F-21)

Diaphragm control valves — For controlling liquids and gases; single- and double-seated types. Minneapolis-Honeywell Regulator Co., Industrial Div. (F-22)

Speed control — Infinitely variable speeds possible in fractional to multi-horsepower models, manual and automatic control. Bulletin G-538. Reeves Pulley Co. (F-23)

Steam traps — Impulse-type traps for heavy condensate loads. Sizes and capacities listed in Bulletin T-1746 from Yarnall-Waring Co. (F-24)

Pump manual—For guidance in selecting proper corrosionproof pumps of several types, capacities to 350 gals. per min. Manual CE-55. American Hard Rubber Co. (F-25)

Titanium tubing — For special purposes, in sizes from ½ to 6 ins. and various wall thicknesses. Bulletin TDC-185. Tubular Products Div., Babcock & Wilcox Co. (F-26)

Boiler-cleaning equipment — Vacuum-cleaning machines for tubes, stack base, breaching, all boiler parts. Spencer Turbine Co. F-27)

Liquid meters—For measuring flow of processing liquids of all types. Form 566-11 describes types and sizes. Neptune Meter Co. (F-28)

Diesel-engine compressors — Integral construction of engine and compressor features a range of machines delivering from 1,065 to 3,200 cu. ft. per min. of air. Form 3207 from Ingersoll-Rand. (F-29)

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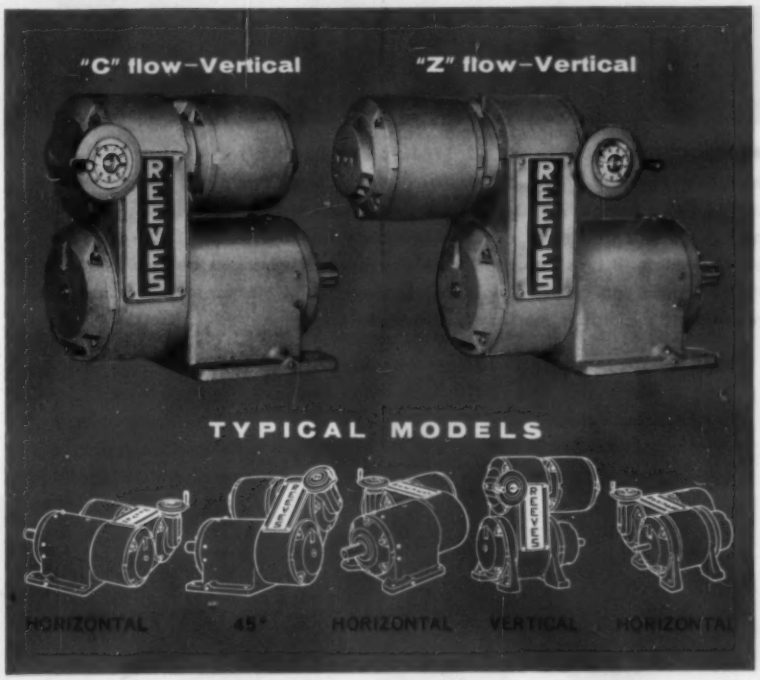

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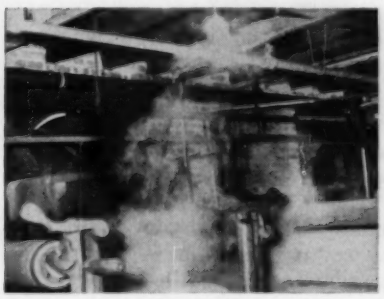

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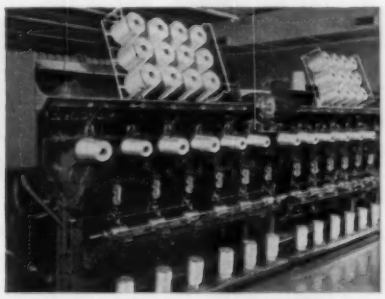

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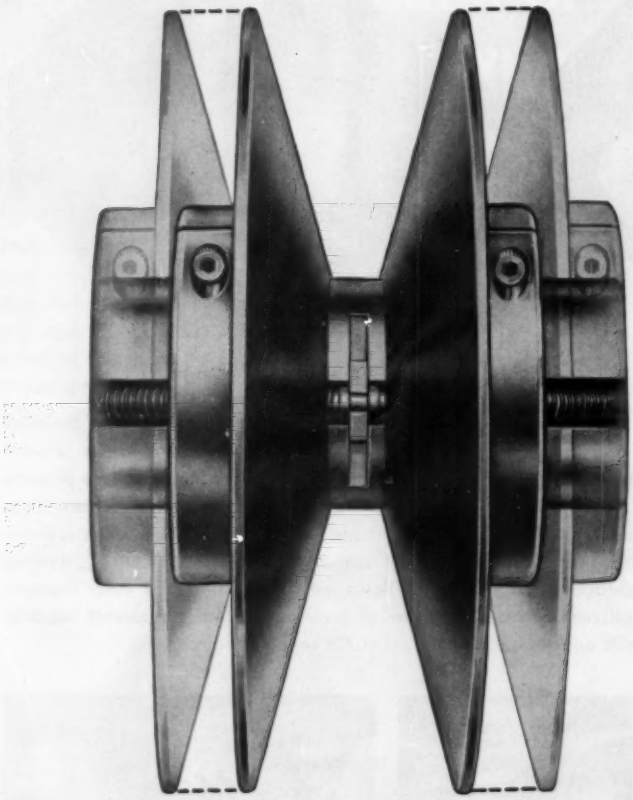
how to change spinning frame speeds



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NEW LITERATURE Continued

Insulation specifications—Six sets of specifications for Foamglas insulation in as many categories are available from Pittsburgh Corning Corp. (F-30)

Vertical milling machine—For plant maintenance shops, manufacturers of metal products. Bulletin 5649. South Bend Lathe Works. (F-31)

Electronic controls—For heating, ventilating, air-conditioning systems; combine electrical and electronic elements to maintain predetermined atmospheric conditions. Barber-Colman Co. (F-32)

V-drives—Catalog F-10 lists small-horsepower drives, pulleys, belts, fans, and accessories. Nine pages of engineering data complete the catalog. Maurey Mfg. Corp. (F-33)

Industrial batteries—Types for hand trucks, driver-ridden trucks, others fully described in Form 5161. Exide Industrial Div., The Electric Storage Battery Co. (F-34)

Lubrication—How to provide specialized lubrication in difficult applications set forth in Bulletin 110. Alpha Molykote Corp. (F-35)

GENERAL

Safety checklist—How to locate potential electrical-explosion hazards in plants. Hazard Finder, Crouse Hinds Co. (F-36)

Loose-leaf binders—Over 2,500 forms of binders listed in 116-page catalog from Elbe File & Binder Co., Inc. (F-37)

Rubber-roll maintenance—How to regrind rubber rolls. Report No. 12 discusses methods and equipment necessary for in-plant regrinding. Rodney Hunt Machine Co. (F-38)

Caster and wheel catalog—Lists many types; all metal, rubber tired, swivel, rigid, flanged wheels, V-grooved wheels, plain and antifriction bearings. Cat. 125. Hamilton Caster & Mfg. Co. (F-39)

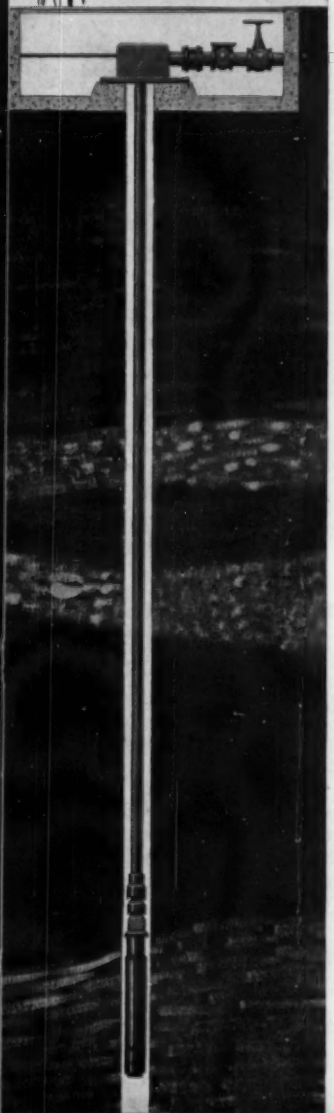
Steel strapping—Materials, methods, machines for strapping boxes listed in detail in catalog from Acme Steel Products Div., Acme Steel Co. (F-40)

Drum lift—Hydraulically powered, one-man device lifts and positions standard or 30-gal. drums. Various accessories. Sterling, Fleischman Co. (F-41)

Materials handling—How to cut costs discussed in a series of case histories presented in a report from Pittsburgh Steel Products Div., Pittsburgh Steel Co. (F-42)

Lift trucks—Auto-battery-powered

Now you can bury your pumping problems



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walking models, 4,000-lb. capacity, 30- to 60-in. forks described in Bulletin 910 AM. Raymond Corp. (F-43)

Dock boards—Magnesium dock boards for concrete truck docks. Leveling equipment, engineering data included in Bulletin DB-215. Mag Line, Inc. (F-44)

Packaged water cooler—For servicing fountains in various locations in plants or offices. Halsey W. Taylor Co. (F-45)

Gravity conveyor—Strip construction in standard units made in several track forms described in folder FT-57 from Rapids-Standard Co., Inc. (F-46)

Technical bibliography—Listing all the major literature on textile dyeing, printing, and finishing, this 12-page booklet is available from Royce Chemical Co. (F-47)

Field-service school—Facilities, methods of teaching, and course of study in maintenance and repair of gas-powered trucks are listed in brochure from Clark Equipment Co., Industrial Truck Div. (F-48)

Insulated monorails—For overhead materials-handling systems, described in Bulletin KS-1 from American Monorail Co. (F-49)

Hyraulic hand truck—For pallets, 1-ton capacity, 4-in. lift. Raymond Corp. (F-50)

Textile World

BOOK REVIEWS

ECONOMIC GROWTH PROJECTOR TO 1970; Eddy-Rucker-Nickels Co., Management Consultants, Harvard Square, Cambridge 38, Mass.; plastic-protected chart, $1.

Ten key growth factors that pertain to the national economy are presented in this pocket-size chart.

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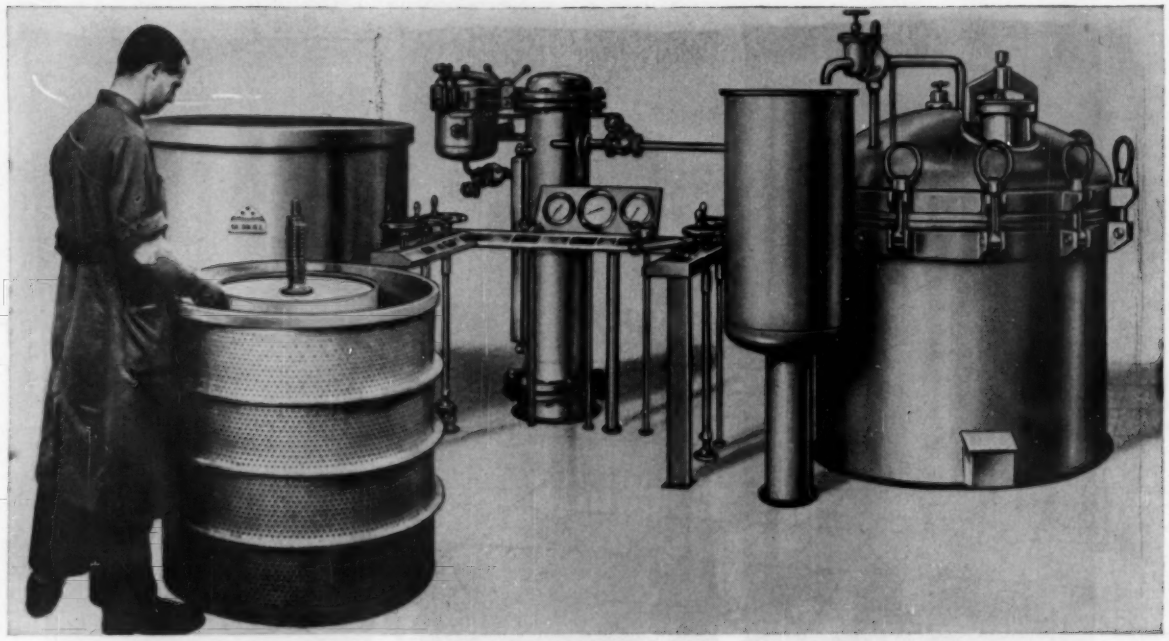

Dyer placing rayon cakes in a Scholl carrier

New SCHOLL Carrier System Dyes Rayon Cakes Without Tubes

Eliminates Rewinding, Speeds Dyeing Cycle

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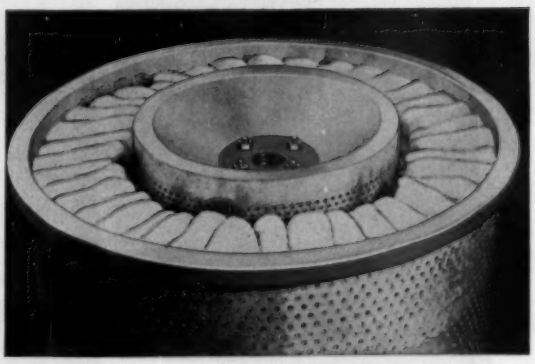
"Dyeing Machines Made By Dyers"



Scholl carrier filled with rayon cakes

With SCHOLL Dyeing Machines You Can

- Dye in less time
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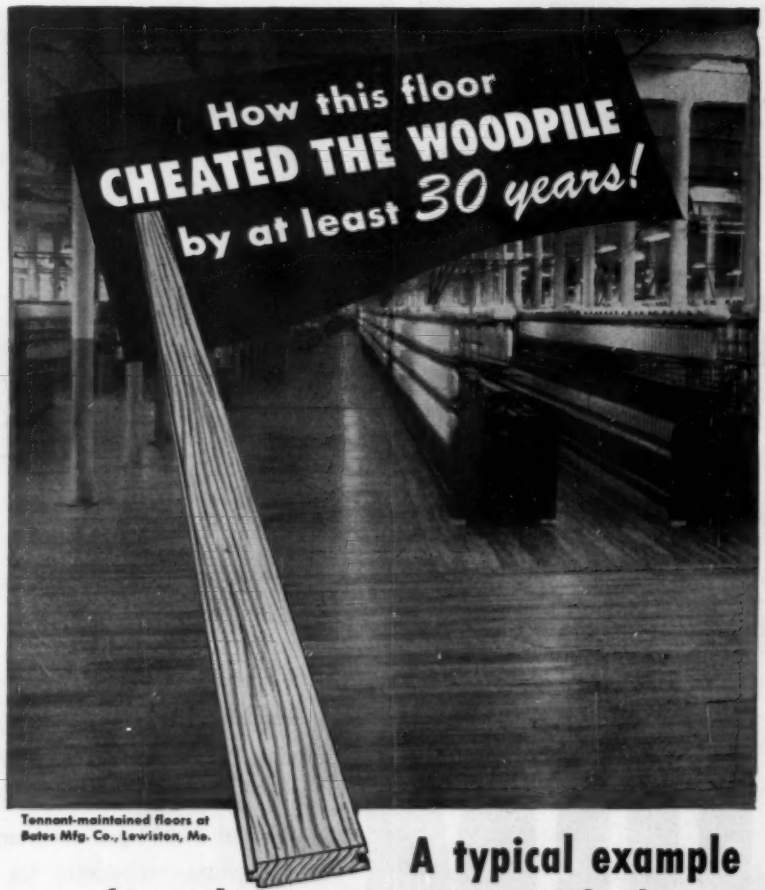

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average values of 30 industrial stocks, factory output, factory manhours, productivity per manhour, average hourly earnings, industrial prices, and consumer prices.

STATISTICAL ABSTRACT OF THE UNITED STATES, compiled by the Bureau of the Census; order from U. S. Government Printing Office, Washington 25, D. C.; 1065 pages, buckram, $3.75.

The 77th annual issue of this standard summary of statistics on the social, political, and economic organization of the United States is brought up to date with 97 new tables. This valuable reference volume is extensively indexed and carries brief text summations before each section that explain terms and trace the origins of the data included.

TESTED SCIENTIFIC INVENTORY CONTROL, by W. Evert Welch; Management Publishing Corp., 22 W. Putnam Ave., Greenwich, Conn.; $12.50.

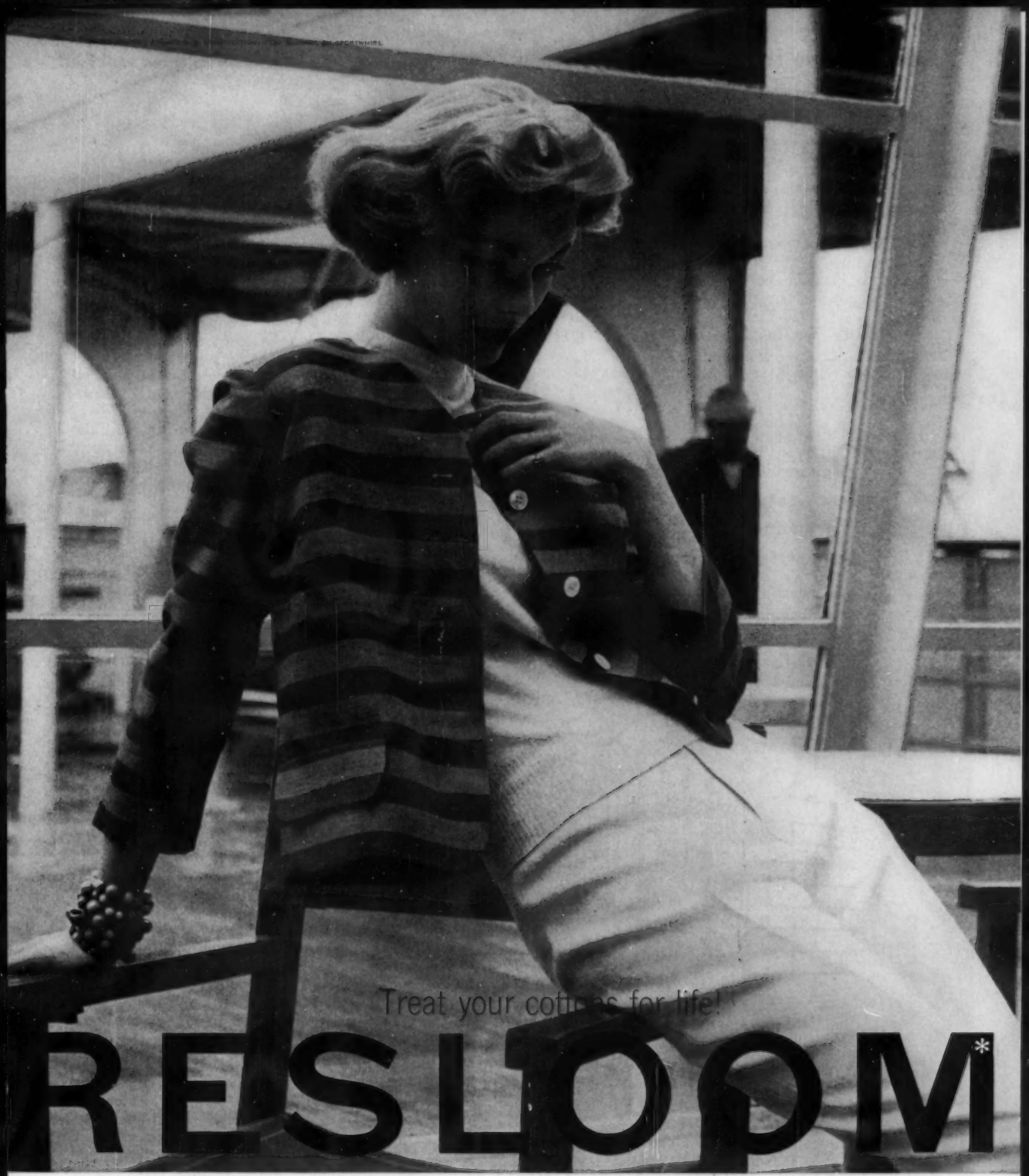
The problems brought up by plant inventories are thoroughly explored in this volume, which provides a guide to many phases of inventory control.

How to reduce inventories without running into stockout problems, how to cope with seasonal fluctuations of demand, how much lead time to allot for reordering, and many other angles of inventory control are dealt with in 86 tables and figures. Basically, the book applies scientific methods to determining what to buy, how much to buy, and when to buy it.

MAINTENANCE ENGINEERING HANDBOOK, edited by L. C. Morrow; McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y.; $20.

Both the management end of maintenance and the practical aspects are thoroughly covered in this book. Organization of personnel, training, work planning, project control, costs, and budgets are some of the subjects covered in the administrative field.

The fundamentals of materials, methods, and equipment and the technical angles that bear on proper upkeep of buildings and mechanical, electrical, and service equipment are well detailed. Much reference data and profuse illustrations enhance the value of the text.



Monsanto E-50 cyclic urea resin gets inside fibers . . . won't wash out!

MONSANTO

*RESLOOM: REG. U. S. PAT. OFF.

Resloom E-50 doesn't coat the fabric. This cyclic urea resin "joins" it, penetrating into the fibers—actually modifying fiber characteristics. Repeated laundering can't shake the finish loose. Resloom-treated cottons require little ironing, stay crush resistant, won't shrink, sag, or stretch. Resloom finishes can be accurately controlled to create a wide variety of hand—from soft and full to firm and crisp.

Call in Monsanto for expert counsel on how to "treat your cottons for life." In addition to Resloom E-50, Monsanto also supplies melamine finishing resins, tradenamed Resloom HP and M-75. Also AC Catalysts for stepping up curing efficiency. For technical bulletin and experimental samples, write Monsanto Chemical Company, Plastics Division, Room 1904, Springfield 2, Massachusetts.

CONTINUED FROM PAGE 89

1,000 m., 1 gram per 1,093.6 yds., 453.59 grams per pound, and 1. lb. per 496,046 yds. The last figure can be rounded off to 496,000 yds.

No. 2 Tex yarn has 2 grams per 1,000 m., 2 grams per 1,093.6 yds., 1 gram per 546.8 yds., and 1 lb. per 248,023 yds.

No. 19.68 Tex yarn has 19.68 grams per 1,000 m., 19.68 grams per 1,093.6 yds., 1 gram per 55.5 yds., and 1 lb. per 25,200 yds. (55.5 x 453.59).

To find the Tex number of the yarn containing 25,200 yds. per lb., the steps are:

1. 25,200 (yds.) ÷ 453.59 (grams) = 55.5 (yds. per gram)
2. 1,000 (yds.) ÷ 55.5 (yds.) = 18 (grams per 1,000 yds.)
3. 18 (grams) × 1.0936 (yds. per m) = 19.68 (grams)
4. 19.68 = Tex yarn number

Two Formulas Can Be Used

Two formulas can be established for determining the Tex yarn number when the yards per pound of a yarn are known.

1. $\text{Tex} = \frac{453.59 \times 1093.6}{\text{yards per pound}} = \text{grams per kilometer}$

2. $\text{Tex} = \frac{496{,}046}{\text{yards per pound}} = \text{relative linear density to No. 1 Tex}$

A No. 1 Tex yarn weighing 1 gram per 1,000 m. has 496,046 yds. in 1 lb. of yarn. If this figure is divided by the length of a cotton hank, 840 yds., the result is 590.5 or the number of cotton hanks in 1 lb. of No. 1 Tex yarn. The last figure can be rounded to 590 without affecting the calculation appreciably.

Since No. 2 Tex yarn has twice the linear density of No. 1 yarn, there are half as many 840-yd. hanks in 1 lb. The conversion to cotton becomes:

$\frac{590.5}{2} = 295.25$ (cotton yarn number).

It should be noted that Table 3, based on this figure, is different from Table 2.

Worsted Numbers Do Not Agree

By the same token, a similar conversion table for worsted-yarn numbers would not agree with Table 2. Example: 30 Tex = 16,535 ÷ 560 = 29.5 (worsted number).

If the calculation for the yards per pound were figured to a greater degree of mathematical accuracy, these figures still would not be the same. The equivalent numbers in Table 2 were calculated by using a conversion factor of 600, since the table illustrates a relationship rather than a method of converting one yarn-numbering system to another.

The conversion from Tex to denier is extremely simple as the weight per 1,000 m. is one-ninth the weight of the same yarn per 9,000 m.

Formula is:

$$\text{Tex} = \frac{\text{denier}}{9}, \quad \text{or} \quad \text{denier} = \text{Tex} \times 9$$

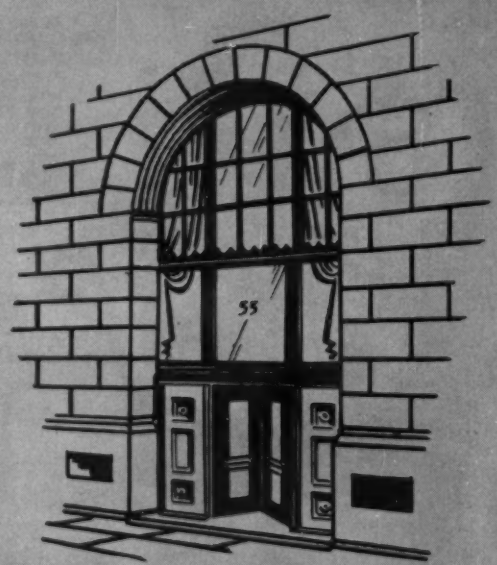
European Mills Use Tex

Undoubtedly, it will take time for the entire textile industry to adopt the Tex system. Maybe it will never happen. Major changes in the selling of yarn, mill records, education of personnel, and a willingness to change are involved.

The Tex system is now being used by some textile mills in Europe. Spanish manufacturers transact all business in terms of Tex, and British manufacturers are giving the matter serious consideration. British Celanese Ltd. announced recently that it plans to adopt Tex numbering soon.

Our service is tailored to provide all the working capital any qualified client needs, without increased borrowing, diluting profits or interfering with management.

Information available for any manufacturer or distributor with $500,000 or more annual sales.



Textile Banking Company

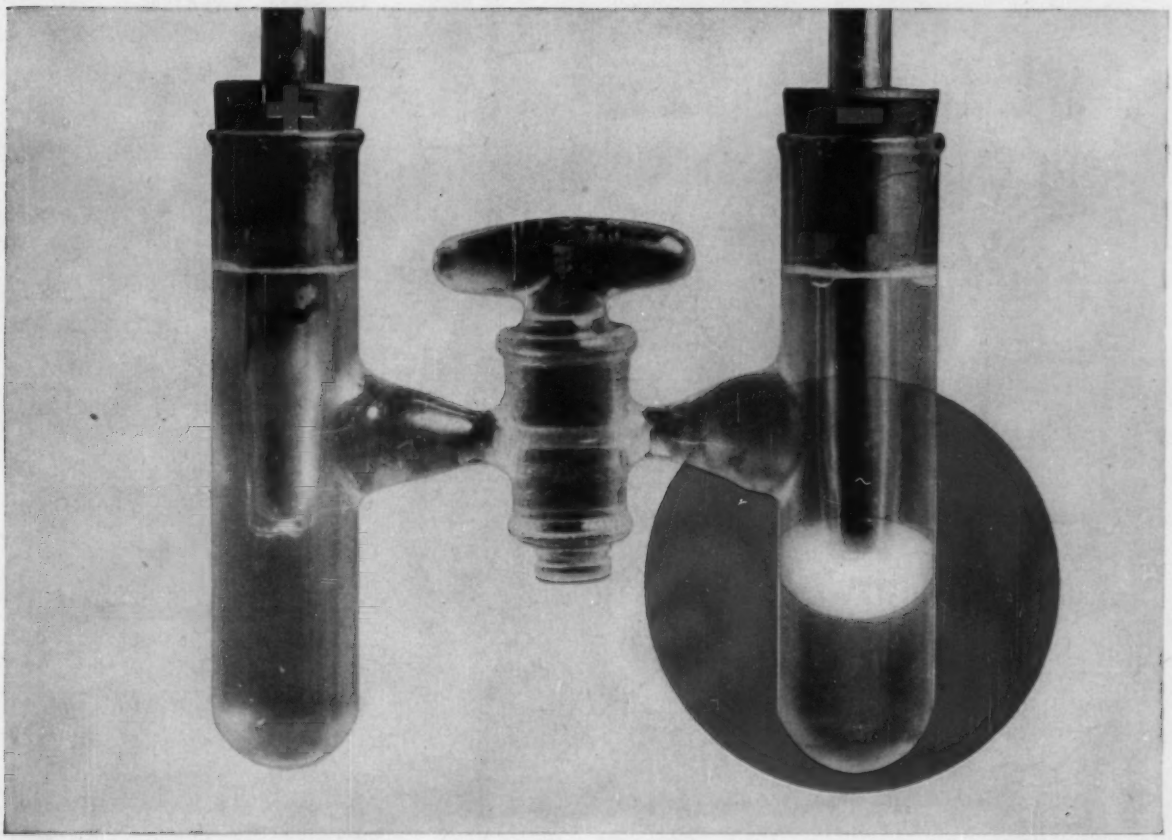
55 Madison Avenue, New York 10, N.Y.

Providing operational financing for the apparel, electronics, furniture, leather, plastics and textile industries.

Subsidiaries:

T. B. C. Associates, Inc., New York Southwest Texbanc, Inc., St. Louis

← For more data, write this page number on Reader-Service card.



This is an unretouched photograph.

NEW! A CATIONIC STARCH

An entirely new concept is shown in the above electrophoresis cell. The cloudy mass about the cathode is National's CATO®—the first cationic starch for textiles.

CATO carries a cationic charge as an integral part of its polymeric structure. The result? A strong electrochemical affinity for negatively charged fibers—as proved by CATO's migration under applied potential to the cathode of the electrophoresis cell.

CATO shows unusual promise as a warp size for cotton, wool, Fiberglas, viscose and other synthetics. Preliminary tests strongly indicate less shedding, greater tensile strength and improved weaving. Moreover, CATO may well offer other striking advantages in printing and finishing.

Sound interesting? We'll be glad to supply trial quantities and have one of our textile specialists demonstrate in your plant.

National
STARCH PRODUCTS INC.

270 Madison Avenue, New York 16 • 3641 So. Washtenaw Avenue, Chicago 32 • 735 Battery Street, San Francisco 11

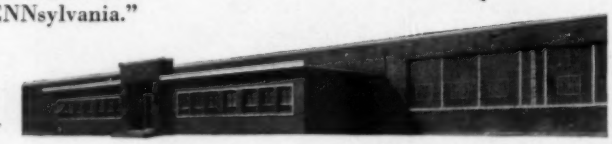
For more data, write this page number on Reader-Service card. →

WESTern PENNsylvania welcomes...

FORSTMANN KNITWEAR

one of Industry's "First Names" finds true compatibility here

There are two important reasons why Forstmann is now producing fine custom sweaters in this modern plant . . . the large reserve of women workers and an unusually co-operative attitude in the community. As Forstmann's plant manager, George Brunton, sums it up: "We find the level of schooling and intelligence excellent among our women. With a very small labor turnover, our superior labor force has tripled its efficiency in six months. In a good civic and dispute-free labor climate, our employment has increased 57% in this short time, and we are planning soon to expand our plant facilities here in WESTern PENNsylvania."



The modern, community-financed plant of Forstmann Woolen Company's Gallet Knitting Mills Division, Uniontown, Pa.

Before locating *your* new plant . . . Get the WESTern PENNsylvania Story

Area Development Department
West Penn Power Company
Cabin Hill, Greensburg, Pa.

Dept. TW-1

CONFIDENTIAL REQUEST: I am interested in the advantages that WESTern PENNsylvania offers apparel manufacturers. Please have your representative call.

Name _____ Title _____

Company _____

Address _____

City and State _____

WEST PENN POWER
an operating unit of the WEST PENN ELECTRIC SYSTEM

CASHMERE SWEATERS

CONTINUED FROM PAGE 83

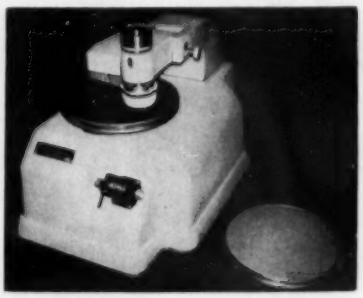
check on each dozen for the correct measurements. The tolerance allowed on each size is only ¼ in. Each sweater is then labeled with the style, yarn lot, size, and color.

A Telesonic packaging machine is used to blow open the polyethylene bags in which all Hadley sweaters are packaged. One girl places the sweater in the bag while a second girl removes the bag and places it in a box.

Sketches of various styles are pinned to the back of the benches where finishing operations are done to prevent wrong labeling. Pressure-sensitive labels for the boxes are printed on a Dennison machine. The boxes containing the finished garments are stored in racks until they are ready for shipping.

EQUIPMENT & SUPPLY NEWS

CONTINUED FROM PAGE 130



Pilling Tester

A pilling tester for both knitted and woven goods is announced by United States Testing Co., 1415 Park Ave., Hoboken, N. J. Test results are obtained in only a few minutes.

The tester has a stroke counter, clearer brush, and attachment for varying the pressure imposed on a sample. Provision is also made for adapting the instrument for wet-and-dry tests.

Circle T-22 on Reader-Service Card

Lap-Pin Pusher

The L&H pneumatic lap-pin pusher, developed by Blackstone Mills, Manchester, N. H., will be sold exclusively by Livingston & Haven, Inc., Box 808, Charleston, S. C.

The mechanism exerts up to 1,000

No Lint Pile-up!

New Louis Allis "Clean-Flo" Self-Cleaning textile motor solves many textile mill motor problems

The new Louis Allis "Clean-Flo" textile motor is a brand new concept in self-cleaning motors, designed exclusively for the textile industry. Smooth, streamlined contours, elimination of pockets, special housing-casting plus high-velocity motor-ventilating fan, keeps motor free of lint.

The new "Clean-Flo" motor is built to meet standard NEMA mounting dimensions, making it an extremely short, enclosed textile motor. Complete interchangeability with existing NEMA motors is also assured for maximum flexibility.

Versatile mounting permits the motor to be built with the shaft brought out through the fan end as an alternate construction. This allows the motor to be mounted in the aisle, but directs the air flow away from the driven machine. There's also a special design for spinning-frame service, with suspension mounting and disc brake.

There are many other important features about this motor that are specially designed for textile service, and we'll gladly tell you all about them in Bulletin 1850, "Clean-Flo Enclosed Textile Motor." Contact your Louis Allis District Office or write Louis Allis Co., 443 E. Stewart St., Milwaukee 1, Wis.

LOUIS ALLIS

TE-107

MANUFACTURER OF ELECTRIC MOTORS AND ADJUSTABLE-SPEED DRIVES

For more data, write this page number on Reader-Service card. →

NOW... see, try, compare the all-new ORDNANCE OTSA 32", 32-feed high production model for Jersey fabrics

OGA
OTA
OTSA

• NOW... ORDNANCE brings you a major improvement in circular fully automatic knitting machines — the new OTSA 32" model with 32 FEEDS! For *really* fast output of top quality Jersey with 1" x 1" rib border here is an incomparable production unit . . . the answer to low unit cost, top operating profit. Check *many* exclusive features such as 2-speed drive, high speed (15 RPM), simplicity and accessibility of all removable and replaceable assemblies, and replaceable forecut walls on both cylinder and dial.

Sales Representative
MAC. M. ROTHKOPF
317 BUSHWICK AVE.
Brooklyn, N. Y.

ORDNANCE GAUGE COMPANY
AMBER & HAGERT STS., PHILA. 25, PA.

ORDNANCE GAUGE

CIRCULAR FULLY AUTOMATIC KNITTING MACHINES

AE OG 302-357

STEEL

Every kind in stock

Immediate shipment

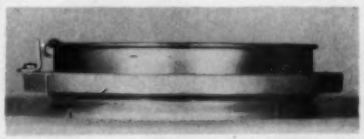
Principal Products: Bars, Structurals, Plates, Sheets, Tubing . . . Carbon, Alloy and Stainless Steels, Machinery and Tools, etc.

RYERSON

Joseph T. Ryerson & Son, Inc. Plants at: New York • Boston • Wallingford, Conn. • Philadelphia • Charlotte, N. C. • Cincinnati • Cleveland • Detroit Pittsburgh • Buffalo • Chicago • Milwaukee • St. Louis • Los Angeles San Francisco • Spokane • Seattle

lbs. of pressure on lap-pin ends, and it pushes the pins 6 to 8 ins. out of either cotton or synthetic-fiber laps.

Circle T-23 on Reader-Service Card

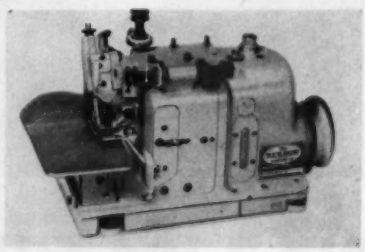


Two-Way Traveler Cleaner

The Robbins two-way traveler cleaner for large packages and high speeds has been announced by Saco-Lowell Shops, 60 Batterymarch St., Boston 10, Mass.

The cleaner consists of a steel stamping in the shape of a right angle with a slot in the bore that permits a wide range of adjustment to the flange. The traveler may run in either direction, and the cleaner is self-cleaning.

Circle T-24 on Reader-Service Card



Sewing Machine

A sewing machine that produces intermittent or continuous shirring simultaneously with overseaming has been announced by Merrow Machine Co., 28 Laurel St., Hartford, Conn.

Called Style M-3DW-SI, the machine has operating advantages common to all Class M machines. The shirring mechanism is brought into operation by pressure on a foot treadle or knee control.

Circle T-25 on Reader-Service Card

Moth-Resistant Paper

Fabrics subject to damage by moths will be protected from damage if they are wrapped in a chemically treated

They look better...sell better!

Upholstery and Drapery Fabrics

touched with the luxury of glittering

FAIRTEX® YARNS

Metallized Mylar* • Metallic • Supported Metallic

... for **lustre that lives** for the life of the fabric!

Fairtex with Foil or Metallized Mylar* or
Fairtex Butyrate Metallic yarns woven into your
upholstery and drapery fabrics add the luxury look!
They look better and sell better because the vibrant beauty
of Fairtex Metallics stops the eye and starts the sale!
Fairtex Yarns are non-tarnishing and can be
safely washed, dry-cleaned or scoured.
As "soft-as-silk" to the touch, they are smooth,
pliable and uniform and do not flake or break.
Fairtex Yarns never lose their glittering
glamour and outlast even the fabric itself!

FAIRTEX® YARNS

Metallized Mylar* • Metallic • Supported Metallic

*Registered Trademark for Dupont's Polyester Film

FAIRTEX CORPORATION — CHARLOTTE, N. C.

CHICAGO: William Napier, 3555 Peterson Avenue
NEW YORK: Robert Napier, 51 E. 42nd. Street
CHARLOTTE: Lanier Branson, Jr., and J.E. MacDougall, Jr., 1808 Liberty Life Bldg.
PHILADELPHIA: William A. Popp & Associates, 3701 N. Broad Street 2678

For more data, write this page number on Reader-Service card. →

ACTUAL PRODUCTION FIGURES

Prove "Coordinated Production" Pays with the . . .

D&F Model L 84" WOOLEN CARD

Figures from mill after mill prove the new D&F 84" Card can double or triple your production.

Time-study, production records offered by a score of Textile Mills, operating with the D&F "Coordinated Production" plan, now substantiate Davis & Furber claims of outstanding production, yield and quality from the NEW D&F 84" Woolen Card.

Figures from all of these mills indicate that you too can get *two, three* or *even more* times production per Card in your own mill from the new D&F "84." These results come from the following D&F design improvements:

a) **increased effective carding area.**
b) **easy *infinite adjustment* of roll speeds, gauge settings and draft control.**
c) ***Greater* percentage of *adjustments* with no *shutdown*.**
d) **convenience and ease of *adjustment* promote maximum use to any desired balance of efficiency and quality.**
e) ***higher yield* by *waste reduction*.**
f) ***Card Clothing* custom designed to *fit specific needs*.**

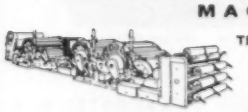
Production figures and design improvements are incorporated in a table and illustrated in a brand new **D&F NEWS QUICK REVIEW,** just off the press. It outlines the complete story in simple visual forms as shown above.

Send for your copy now. This complete picture of practical wool carding can be readily adapted to fit *your* production through the long established Davis & Furber "Coordinated Production" plan.

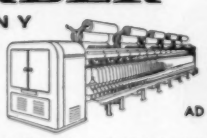
Call or write us now at North Andover or Charlotte.

1832 — "Our 125th Year" — 1957
SERVICE TO THE TEXTILE INDUSTRY

DAVIS & FURBER
MACHINE COMPANY



TEXTILE MACHINERY DESIGNERS AND MANUFACTURERS
North Andover, Mass.
Charlotte, North Carolina

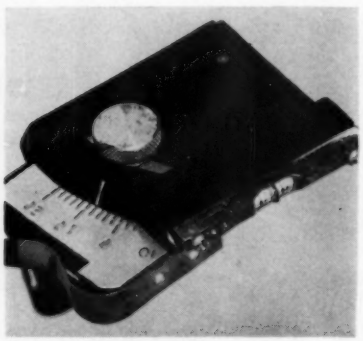


AD 12-4

CARDS • SPINNING FRAMES • PREPARATORY MACHINERY • WARP DRESSING MACHINERY • FINISHING MACHINERY
MACHINERY MODERNIZATION • ACCESSORIES, SUPPLIES, CARD & NAPPER CLOTHING, GARNET WIRE, TAPES & APRONS
SPARE PARTS • TECHNICAL SERVICE & CONSULTATION

paper developed by Daubert Chemical Co., 333 N. Michigan Ave., Chicago, Ill. The paper is available in rolls 36 ins. wide and 200 yds. long.

Circle T-26 on Reader-Service Card



Comber Gauge

A comber gauge for setting the angle of the forward pitch of the top comb has been announced by Saco-Lowell Shops, 60 Batterymarch St., Boston 10, Mass.

To change the angle of the top comb, the gauge is placed on the top comb and both pivot screws are loosened. The dial is then turned until the indicator hand points to the proper angle on the degree scale. When the bubble on the gauge is centered, the pivot screws are tightened. Settings are easy and accurate.

Circle T-27 on Reader-Service Card

Stair-Climbing Truck

Precision Equipment Co., 3716 N. Milwaukee Ave., Chicago 41, Ill., announces a stair-climbing truck. Called E-Z Climber, the hand truck has two rocker arms for use in mounting stairs and curbs and for transporting loads downstairs to basements, etc.

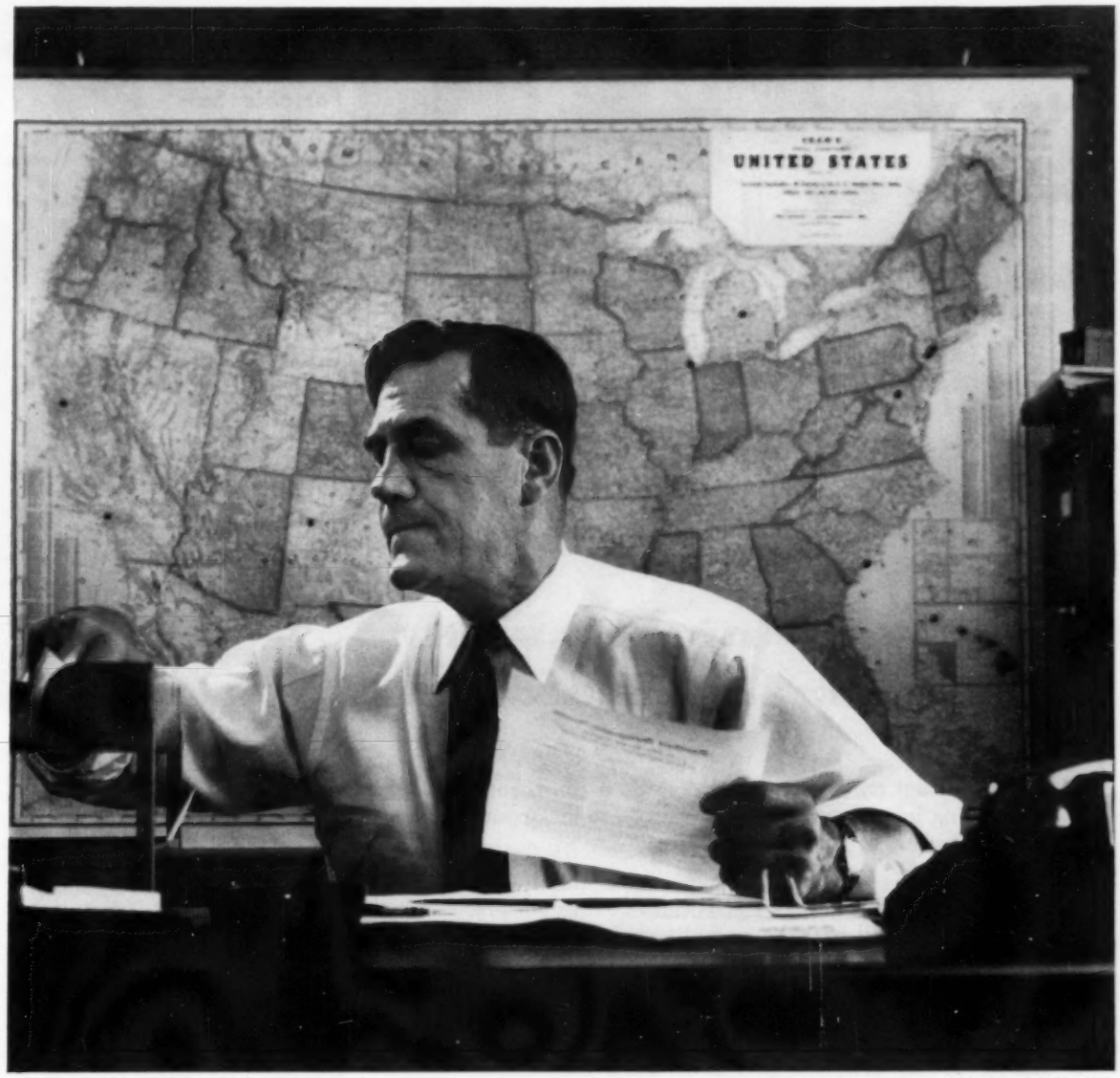
Circle T-28 on Reader-Service Card

Trolley Conveyor

A nonpowered overhead trolley conveyor for use in narrow aisles is announced by Rapistan-Keystone, Inc., 21,750 W. Eight Mile Road, Detroit, Mich. The conveyor features a four-wheel trolley that is hand-pushed on a monorail.

Circle T-29 on Reader-Service Card

CONTINUED ON PAGE 178



COPYRIGHTED MAP COURTESY OF THE GEORGE F. CRAM CO., INC.

This man has 48 states on his mind

(His job is moving Dow Caustic Soda into your backyard)

He's learned to think in terms of the best type of transportation, time in transit and customer convenience in receiving. He's an important link in the long chain of people who produce, sell and deliver Dow Caustic Soda.

Dow caustic in many forms—solid, flake, ground and solution—moves into the backyards of American industry from several strategically located shipping points.

It is shipped direct from three Dow producing plants located at Freeport, Texas; Midland, Michigan; and Pittsburg, California. A new plant at Plaquemine, Louisiana, will be in production in 1958.

It is also distributed through terminals at Bayonne, New Jersey; Carteret, New Jersey; Port Newark, New Jersey; Charleston, South Carolina; Chicago, Illinois; Baltimore, Maryland; and Los Angeles, California. A new terminal at Grants, New Mexico, will help to provide even better service to Dow Caustic Soda customers.

For more information about the advantages of buying caustic from Dow, write to THE DOW CHEMICAL COMPANY, Midland, Michigan, Department AL 604E.

YOU CAN DEPEND ON DOW

For more data, write this page number on Reader-Service card. →

Her work would be better . . .

if the warp threads were sized with *Clinton* starches

You can count on Clinton starches to do a consistently good sizing job on every warp thread . . . to make your weaving easier, better.

Clinton starches give you the dependable quality that makes yarns weave at high efficiencies . . . turn out first rate textiles that'll pass the most discriminating inspector's final check. In fact, many mills use Clinton starches as a standard of comparison. They increase warp strength to easily withstand abrasion . . . reduce friction . . . smooth fuzzy fibres. Clinton starches give your fabrics proper crispness and body when used in the finishing process too.

Choose Clinton starches. You can depend on them . . . warp after warp after warp.

and remember technical service in connection with your specific problems is available upon request.

Quality products

FROM THE WORLD'S CORN CENTER

CLINTON

CLINTON CORN PROCESSING COMPANY
CLINTON, IOWA

Our 50th Anniversary Year—1907-1957

EQUIPMENT & SUPPLY NEWS

CONTINUED FROM PAGE 176

Portable Saw

A portable 7¼-in. electric saw is available from Thor Tool Co., Aurora, Ill. Driven by a Universal 1¾-hp. motor, the saw has quick wing-nut adjustments for depth of cut and for angle cuts to 45°.

Circle T-30 on Reader-Service Card

Industrial Truck

A highly maneuverable, 2,000-lb. capacity, sit-down industrial truck is available from Lamson Mobilift Corp., Syracuse 1, N. Y. Called the Model B-224, the truck is powered by gasoline or liquid petroleum gas and features powered directional controls mounted on the steering column.

Circle T-31 on Reader-Service Card

Bearing Assembly

A duplex bearing assembly adaptable to both vertical and horizontal mounting is available from Randall Graphite Bearings, Inc. The assembly combines two sleeve ball-bearing assemblies in a single steel housing. The bearings are self-aligning and prelubricated.

Circle T-32 on Reader-Service Card

Mill Truck

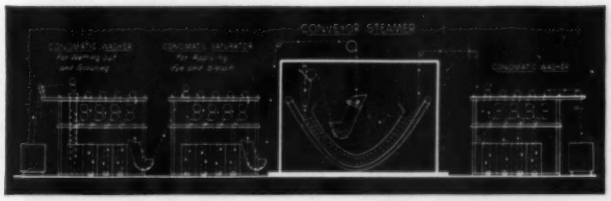
Yale & Towne Mfg. Co., 11,000 Roosevelt Blvd., Philadelphia, Pa., announces a line of medium-capacity, electric-powered steel trucks that feature smaller dimensions, hydraulic wheel brakes, and a hydraulic tilt feature for load safety. Called the K-48, the trucks also feature hydraulic power steering.

Circle T-33 on Reader-Service Card

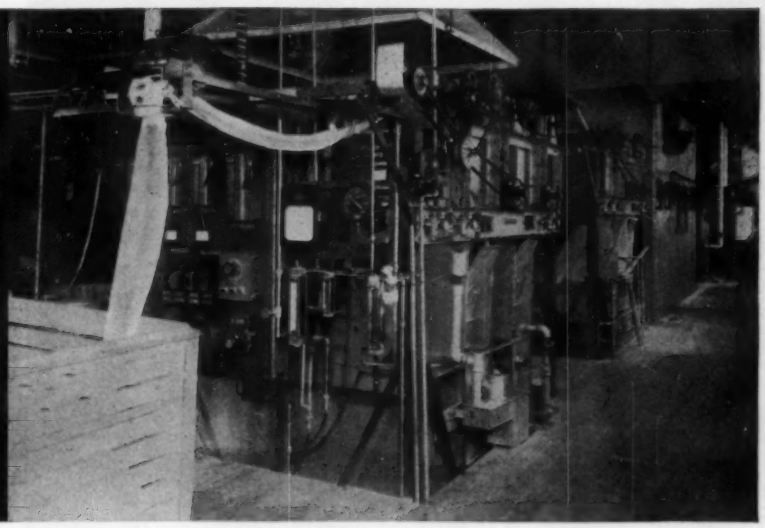
Liquid-Level Control

An electronic liquid-level control has been marketed by Machinery Electrification, Inc., Northboro, Mass. Low voltage applied to probes that contact the liquid activates relays that in turn control the flow of liquids to the container.

Circle T-34 on Reader-Service Card



Another PROCTOR continuous bleach range at work for P. H. Hanes



The second Proctor Continuous Bleach Range —recently installed at P. H. Hanes Knitting Company of Winston-Salem, N.C.

This Proctor Continuous Bleach Range was put into operation at the P. H. Hanes Knitting Company of Winston-Salem, N.C., early this year. The Hanes management was so impressed by the outstanding performance of their first Proctor Range that they turned immediately to Proctor when additional capacity was needed.

Like so many other textile manufacturers, Hanes relies on the name Proctor, for it means dependability, economy and complete processing satisfaction. They know that Proctor equipment means more opportunity for profit.

- **Re-runs eliminated**
- **Operating speeds up to 150 yards per minute**
- **Cost savings up to $17.00 per 1000 pounds bleached**
- **Amortized in one year**
- **Eliminates sorting of batches for cutting room**
- **Insures cloth of excellent hand, whiteness, uniformity, shrinkage and absorbency**
- **Tremendous savings in water consumption**
- **Saves space—easily arranged to suit your plant.**

Proctor

PROCTOR & SCHWARTZ, Inc.

PHILADELPHIA 20, PA.

Manufacturers of Textile Machinery and Industrial Drying Equipment

For more data, write this page number on Reader-Service card. →

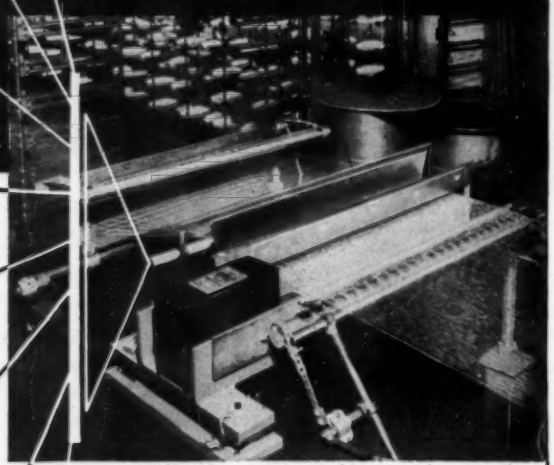
100% INSPECTION

Lindly *automatic* yarn inspector

guarantees the relative quality of warped yarn for warp knitted cloth or woven cloth fabrics by establishing **The Lindly Count.**

Accurately and economically, the Lindly Automatic Yarn Inspector detects yarn faults. Similarly, it sets up a count or stop motion on those faults that are larger than your operation will permit.

YOU DETERMINE QUALITY . . . AND YOU CAN STATE THAT QUALITY IN TERMS OF **THE LINDLY COUNT.**



Lindly Automatic Yarn Inspector inserted in a warping operation.

OTHER FEATURES—Improve quality through controlled tension during warping . . . improve quality of finished woven or warp knitted fabrics . . . assure more even dyeing.

FOR FULL INFORMATION ON THE LINDLY AUTOMATIC YARN INSPECTOR, WRITE OR CALL FOR LITERATURE . . . AND USE THE LINDLY ADVISORY SERVICES WITHOUT OBLIGATION.

It Pays to Know The Lindly Count

LINDLY & COMPANY, Inc.

248 HERRICKS ROAD • MINEOLA, NEW YORK

EQUIPMENT & SUPPLY NEWS

CONTINUED FROM PAGE 178

Air Purifier

Ozone is generated in a small unit intended to freshen and deodorize air in factories and public places. Developed in Switzerland, the machine is available from Excell-Air Div., Gubelin International Corp., Mt. Kisco, N. Y. The output of ozone is adjustable to suit conditions at the time of use.

Circle T-35 on Reader-Service Card

Safety Packages

Chemicals packed in special corrugated cartons carrying four 1-gal. bottles are now being offered by Fisher Scientific Co., 425 Forbes St., Pittsburgh 19, Pa. Cartons with double side walls and triple-thick heads enclose each bottle, and the outer carton provides a snug fit and suitable shipping protection for each four-bottle unit.

Circle T-36 on Reader-Service Card

Small Boilers

A series of low-pressure boilers that are complete with combustion units and controls has been announced by Orr & Sembower, Inc., Reading, Pa. The boilers are offered in 10-, 15-, 20-, and 25-hp. ratings and operate under forced draft; so no stack is necessary. They are available for either gas or oil firing.

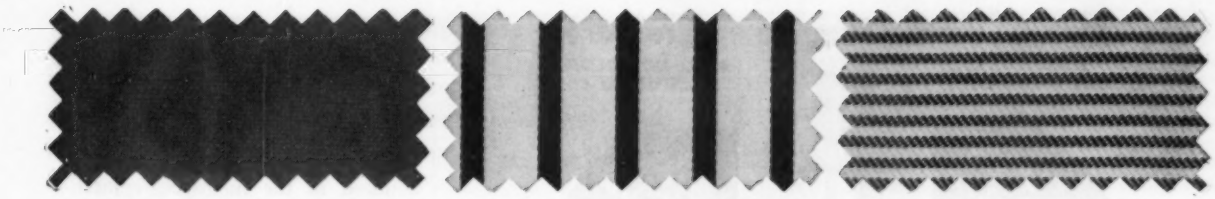
Circle T-37 on Reader-Service Card

Heavy-Duty Exhauster

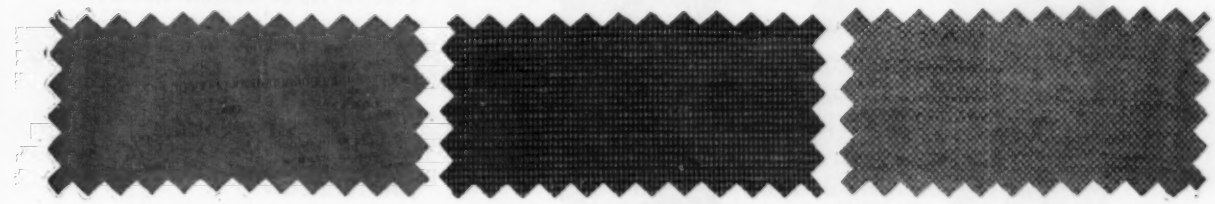
Exhaust fans complete with motors and conical-jet housings have been marketed by Quickdraft Co., P. O. Box 87, Canton 1, Ohio. The motors and fans are not exposed to the gases to be exhausted but operate in clean outside air. The exhaust gases are removed by injection as the fresh air is introduced into the injection chamber. Capacities of the fans run from 8,460 to 60,000 cu. ft. per min.

Circle T-38 on Reader-Service Card

CONTINUED ON PAGE 182



From crisp classics to superb new basketweaves . . .



from shantung types to soft, textured homespuns

ARNEL SHARKSKIN is proving the best thing to hit spring and summer in years. Its dramatic, and mounting success at retail right now points irrefutably to an even bigger success in spring '58. Every converter and mill man knows that when a fabric ends a season selling stronger every day, it will be a real force the following year.

Arnel Triacetate is currently being used by more than 100 manufacturers. Leading fashion magazines and newspaper editors continue to give their signature of approval in a growing flood of editorials. There is no question but that Arnel sharkskins will be big profit volume runners for spring and summer 1958. For further information, contact Celanese Corporation of America, Textile Sales Division, Charlotte, North Carolina.

Celanese® Arnel®

DISTRICT SALES OFFICES 180 Madison Ave., New York 16, N. Y. 819 Santee St., Los Angeles, California
P. O. Box 1414, Charlotte 1, N. C. 200 Boylston St., Chestnut Hill 67, Mass.
Room 10-141 Merchandise Mart, Chicago 54, Illinois

EXPORT Amcel Co., Inc. and Pan Amcel Co., Inc., 180 Madison Ave., New York 16, N. Y.

IN CANADA Chemcell, Canadian, Chemical & Cellulose Co., Ltd., 2035 Guy St., Montreal

ARNEL TRIACETATE A Celanese CONTEMPORARY FIBER

This is the official Arnel symbol—evidence that this fabric of this new triacetate fiber has been pre-tested for performance claimed.

For more data, write this page number on Reader-Service card. →

AURORA® Vertical Sump Pumps are 'TOPS'
HEAVY DUTY and LIGHT DUTY
ALSO NON-CLOG SIZES UP TO 8"
AURORA Always PUMPS
For all sump drainage; liquids handling in industry; transfer of chemical and hot liquids; handling viscous or high temperature liquids; boiler blow-off; heating returns etc.; also for handling screened and unscreened sewage and industrial waste.
Write for
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(Heavy Duty & Non Clog)
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Write TODAY for CONDENSED CATALOG "M"
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HASKELL-DAWES
MACHINE CO., INC.
2231 E. Ontario Street
Philadelphia 34, Pa.

EQUIPMENT & SUPPLY NEWS

CONTINUED FROM PAGE 180

Improved Computer

New developments have been announced in the high-speed general-purpose electronic computer made by Remington Rand, Div. of Sperry Rand Corp., 315 Fourth Ave., New York 10, N. Y. The machine is now said to be highly efficient in solving complex mathematical problems and is smaller in size.

Circle T-39 on Reader-Service Card

Concrete Saw

A saw to cut concrete floors is announced by Clipper Mfg. Co., 2800 Warwick Blvd., Kansas City 8, Mo. The saw can be handled by one man and is made to remove concrete strips for conduit lines and to cut out worn areas in floors.

Circle T-40 on Reader-Service Card

Portable Crane

A portable two-ton crane that is delivered knocked down and can be set up by two men in 10 mins., or just as quickly dismantled, is announced by Wise Engineering Co., 66 Chapel St., Newark 5, N. J.

Circle T-41 on Reader-Service Card

Disk Brake

Stearns Magnetic, Inc., Milwaukee, Wis., has announced a through-shaft magnetic brake. Called the HT-50 Through Shaft, the unit is designed so that the motor shaft extends through the brake, permitting drives off both ends of the shaft.

Circle T-42 on Reader-Service Card

Fire Alarm

Built-in automatic fire-alarm units are available in package form ready for installation from Industrial Automation Corp., 2515 W. Montrose Ave., Chicago, Ill.

Circle T-43 on Reader-Service Card

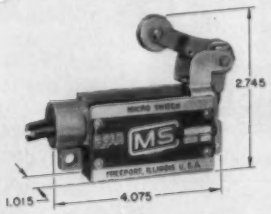
Flow Counter

Called the Norelco Flow Proportional Counter, a measuring device

MICRO SWITCH . . . FIRST IN PRECISION SWITCHING

How to
CUT COSTS in
textile production processes
by installing
MICRO SWITCH
Precision Switches

Here are ways mill operators use these versatile switches to give more automatic control

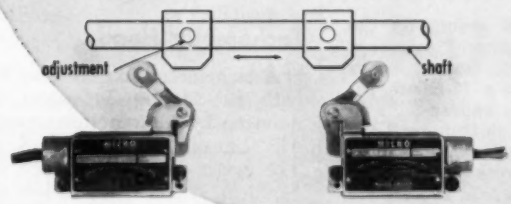


General-purpose limit switch for motion control

Illustrated are two general-purpose limit switches used in a typical motion-control application. Here the stationary limit switches control the motion as they are actuated by dogs on the driven member.

The switches used in this application combine the features of precise operation, rugged construction and excellent sealing in one compact unit. The adjustable roller arm actuator is suitable for fast cam or slide operation. The roller arm is field adjustable through a vertical arc of 260°.

This switch is Underwriters' listed at 15 amps., 125, 250 or 460 vac; ½ amp. 125 vdc; ¼ amp. 250 vdc.

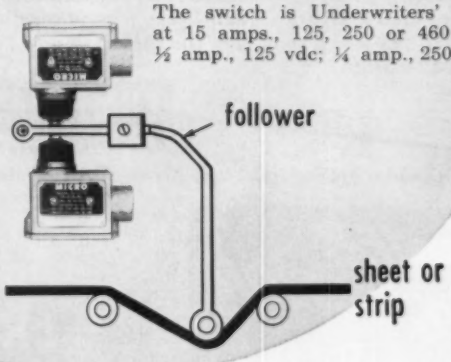


Sealed-plunger switch keeps tension uniform

These precision switches give automatic tension control as material passes to a winding reel. The switches, when actuated by the "follower," speed up or slow down the reel and keep the tension at the proper point.

The switch shown is enclosed and has a sealed-plunger actuator. An elastomer boot on the plunger and a gasket between the bottom plate and the housing seal out lint, dust and other foreign materials.

The switch is Underwriters' listed at 15 amps., 125, 250 or 460 vac; ½ amp., 125 vdc; ¼ amp., 250 vdc.



Mill operators have found hundreds of other uses for MICRO SWITCH Precision Switches

- as trumpet stops on combing heads
- as carriage movement controls
- to prevent needle breakage
- to stop bobbin winding when bobbin fills
- as thread breakage detectors
- to control cloth position as web unrolls
- to position clamps on cloth stretching machine
- as thread run-out detector on loom shuttles
- to automatically eject unfilled quills
- to stop motor when gear box is opened
- to control tension on cloth measuring machine
- as selvedge build-up control
- as fabric thickness detectors
- and many other textile applications

Send for catalog 83 on Industrial Enclosed switches

For complete information contact the Authorized Distributor near you. Technical Field Engineering is available at your MICRO SWITCH branch office.

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A DIVISION OF MINNEAPOLIS-HONEYWELL REGULATOR COMPANY
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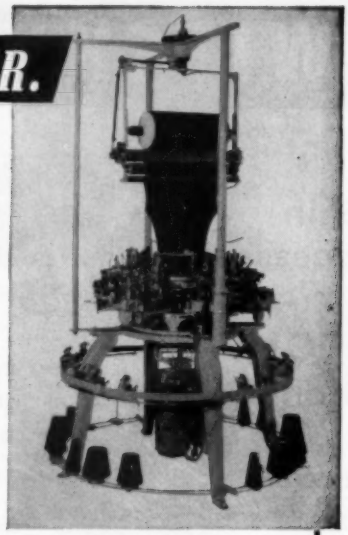
ALL NEW...

TOMPKINS S-1 JR.

MAKES THE MOST PERFECT CLOTH POSSIBLE



HERE'S A TYPICAL EXAMPLE...

Model S-1 Junior making fleece with 400-lbs. of Carter 26's and 8's —five feeds, 18" cylinder, running time 68-turns per minute . . .

- NO IMPERFECTIONS
- NO BROKEN NEEDLES

You can produce any class of cloth in the wide range of circular spring needle knitting—in greater quantity, with less waste and less needle breakage—on the New S-1 Junior! It gives you the proven Tompkins system in fully modern form . . . with triple stop motions, furnishing wheels, new gearless drive, automatic oiler and air cleaner! Get the full story now . . . be among the first to profit!

TOMPKINS BROS. CO.

623 ONEIDA ST. • SYRACUSE 4, N. Y.

Makers of Circular Spring and Latch Needle Knitting Machinery...Since 1846

GREATER PROTECTION to your AIR LINE!

M-B

AUTOMATIC WHIRL-A-WAY AIR LINE FILTER MODEL W-1 *and* TRAP

RIBBON TYPE FILTERING UNIT removes solids .00039 and larger. Transparent plastic bowl makes filtered foreign matter visible. Gives maximum protection to all types of Lint blowers, Blow-off Hoses and various air-operated controls.

The TRAP ejects water automatically. Operates upon accumulation of 3 to 4 ounces. Discharges in less than 5 seconds. Assures dry air in pneumatic system at all times. Non-corrosive throughout.

M·B PRODUCTS

46 VICTOR AVE., Div. 16
DETROIT 3, MICHIGAN

Men on the Move

Now available in a *new edition* . . . with *new figures.*

This popular booklet points up the important sales problem of personnel turnover in industry. Out of every 1,000 key men (over a 12-month period) 343 new faces appear . . . 65 change titles . . . 157 shift . . . and 435 stay put. These figures are based on average mailing address changes on a list of over a million paid subscribers to McGraw-Hill magazines.

Write us for a free copy

Company Promotion Department

McGraw-Hill Publishing Co., Inc.

330 West 42nd Street,
New York 36, New York

is announced by the Instruments Div., North American Phillips Co., Inc., 750 S. Fulton Ave., Mount Vernon, N. Y. Used with the standard Norelco X-ray Spectograph, the device detects and measures all elements down to and including magnesium.

Circle T-44 on Reader-Service Card

Valve Attachment

A power-centered neutral attachment for its double-solenoid Speed King Valves is announced by Valvair Corp., 454 Morgan Ave., Akron 11, Ohio. The attachment provides positive mechanical centering of the main valve stem in neutral position.

Circle T-45 on Reader-Service Card

Air Filter

A glass-fiber web supplies the filtering medium in an air filter introduced by Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa. Light weight, high tensile strength, and ability to retain all but 0.03% of particles 0.3 microns in diameter are claimed for the unit, which is supplied in capacities of 35 to 1,000 cu. ft. per min.

Circle T-46 on Reader-Service Card

Corrosion-Resistant Heaters

Heat-exchange units in several alloys are offered by Tranter Mfg. Co., Inc., Lansing 4, Mich. Type 316 stainless steel. Monel metal, Carpenter 20, various Hastelloys, and nickel are used to meet different industrial requirements. The units are made from embossed plates welded together and are available in sizes to suit the application.

Circle T-47 on Reader-Service Card

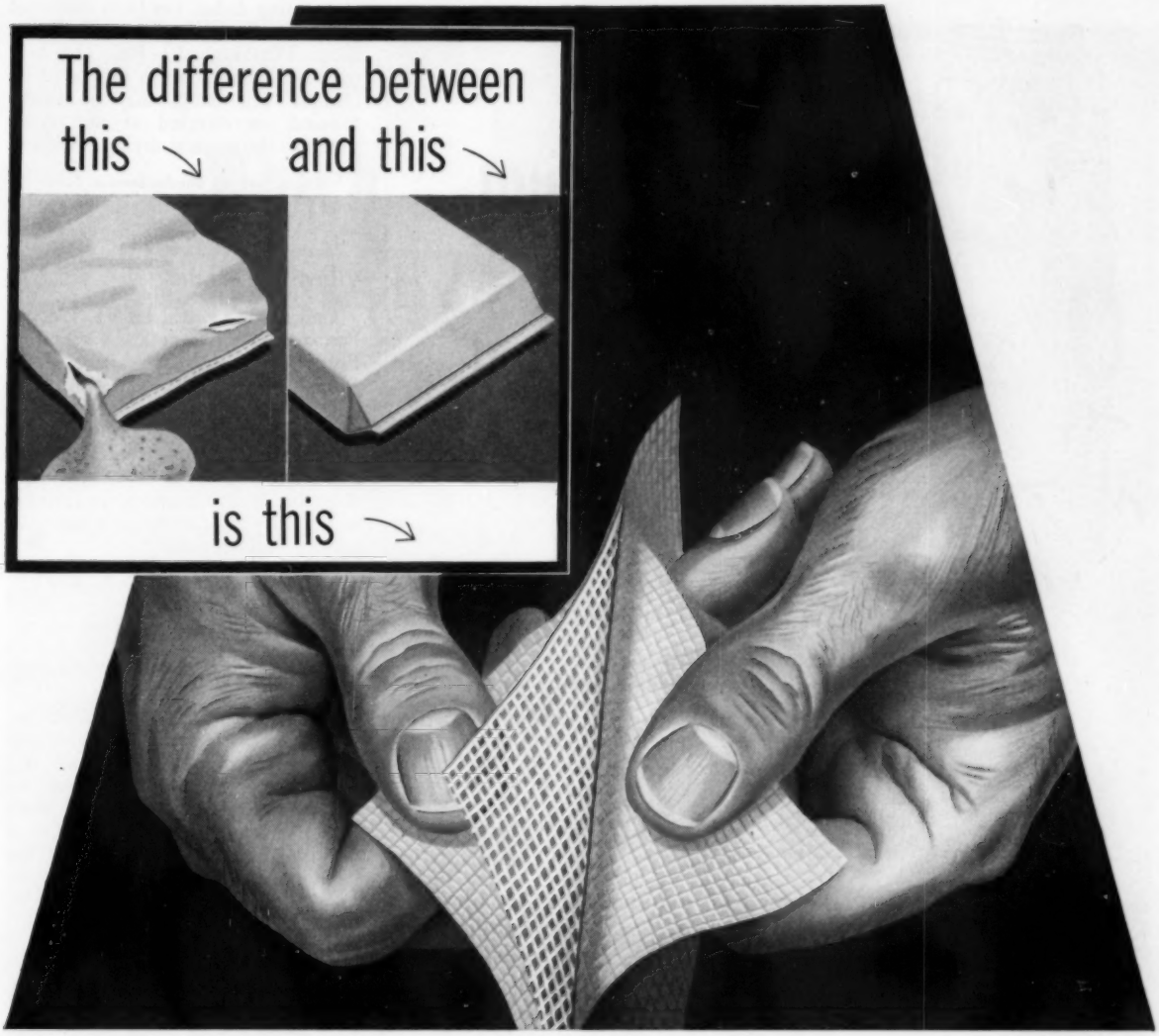
Tachometer Head

A tachometer take-off head for use with its Metron Indicators is announced by Metron Instrument Co., 432 Lincoln St., Denver 3, Colo. The device will measure high speeds, 5,000 to 30,000 rpm., or low speeds, ½ to 100 rpm.

Circle T-48 on Reader-Service Card

Infrared Heaters

A compact and flexible unit that supplies infrared heat to laboratory



AVISCO RAYON in scrim fabrics adds strength of steel mesh, flexibility of fabric to laminates and films

As a support for films, scrim fabric of Avisco rayon has an incredible tear strength and durability that makes tents, tarpaulins, awnings—practically every kind of covering—almost indestructible. It isolates puncture breaks immediately, makes possible on-the-spot repairs.

As a reinforcement for laminates, it permits the wrapping of products of every conceivable shape. This matchless flexibility is due to *creping after lamination*, which allows for extreme distortion in laminates without breaking or tearing. Creping also reduces areas of surface contact, so that abrasion damage is minimized.

The extra strength and impact resistance also result in *substantial savings in wrapping and shipping costs.* Fewer layers of wrap are needed in bagging such products as cement, fertilizer, and other granular materials. That means less weight to ship, lower freight charges.

Scrim of Avisco rayon is a "magic ingredient" that can open up markets overnight. By "upgrading" films and laminates, it creates a new world of uses for these products.

Want to know more about scrim fabrics of Avisco rayon and what they can do for *your* products? We'd be glad to help. The technical services of American Viscose are yours for the asking. Just fill in the coupon and send it in. You'll hear from us immediately.

AVISCO® RAYON

*Name*_____

*Address*_____

*Company*_____

*Information wanted*_____

AMERICAN VISCOSE CORPORATION
350 Fifth Ave., New York 1, N. Y.

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he's working for you

THIS FELLOW IS TRAINED IN YOUR BUSINESS. His main duty is to travel the country — and world — penetrating the plants, laboratories and management councils . . . reporting back to you every significant innovation in technology, selling tactics, management strategy. He functions as your all-seeing, all-hearing, all-reporting business communications system.

THE MAN WE MEAN IS A COMPOSITE of the editorial staff of this magazine. For, obviously, no one individual could ever accomplish such a vast business news job. It's the result of many qualified men of diversified and specialized talents.

AND, THERE'S ANOTHER SIDE TO THIS "COMPOSITE MAN," another complete news service which complements the editorial section of this magazine — the advertising pages. It's been said that in a business publication the editorial pages tell "how they do it" — "they" being all the industry's front line of innovators and improvers — and the advertising pages tell "with what." Each issue unfolds an industrial exposition before you — giving a ready panorama of up-to-date tools, materials, equipment.

SUCH A "MAN" IS ON YOUR PAYROLL. Be sure to "listen" regularly and carefully to the practical business information he gathers.

McGRAW-HILL PUBLICATIONS

evaporating dishes has been marketed by Fisher Scientific Co., 425 Fisher Bldg., Pittsburgh 19, Pa. The heat source is infrared lamps supported on clamps. The lamps may be raised, lowered, or directed at any angle suited to the greatest drying efficiency.

Circle T-49 on Reader-Service Card

Vibrating Feeder

Called the Eriez HI-VI Electro-Permanent Magnetic Vibratory Feeder, a device is available from Eriez Mfg. Co., Erie 6, Pa., to handle bulk materials from big pieces of coal, stone, etc., down to fine powders. Operating directly from available 115-v. or 230-v. a.c., the unit is adaptable for such operations as feeding, mixing, drying, cooling, packing, conveying, and spreading.

Circle T-50 on Reader-Service Card

Ball Valve

The double-ball seal principle has been used in a valve available from Jamesbury Corp., 62 Millbrook St., Worcester, Mass. Made of aluminum, brass, bronze, Monel, stainless steel, carbon steel, and other alloys, it is possible to use a valve made of the same material as the connecting pipes.

Circle T-51 on Reader-Service Card

Mechanical Stapler

An air-operated stapling machine is made by Container Stapling Corp., 308 N. Park Ave., Herrin, Ill. The machine will staple cartons of any size from 3 to 30½ ins. and needs no connections other than a 60-psi. compressed-air line.

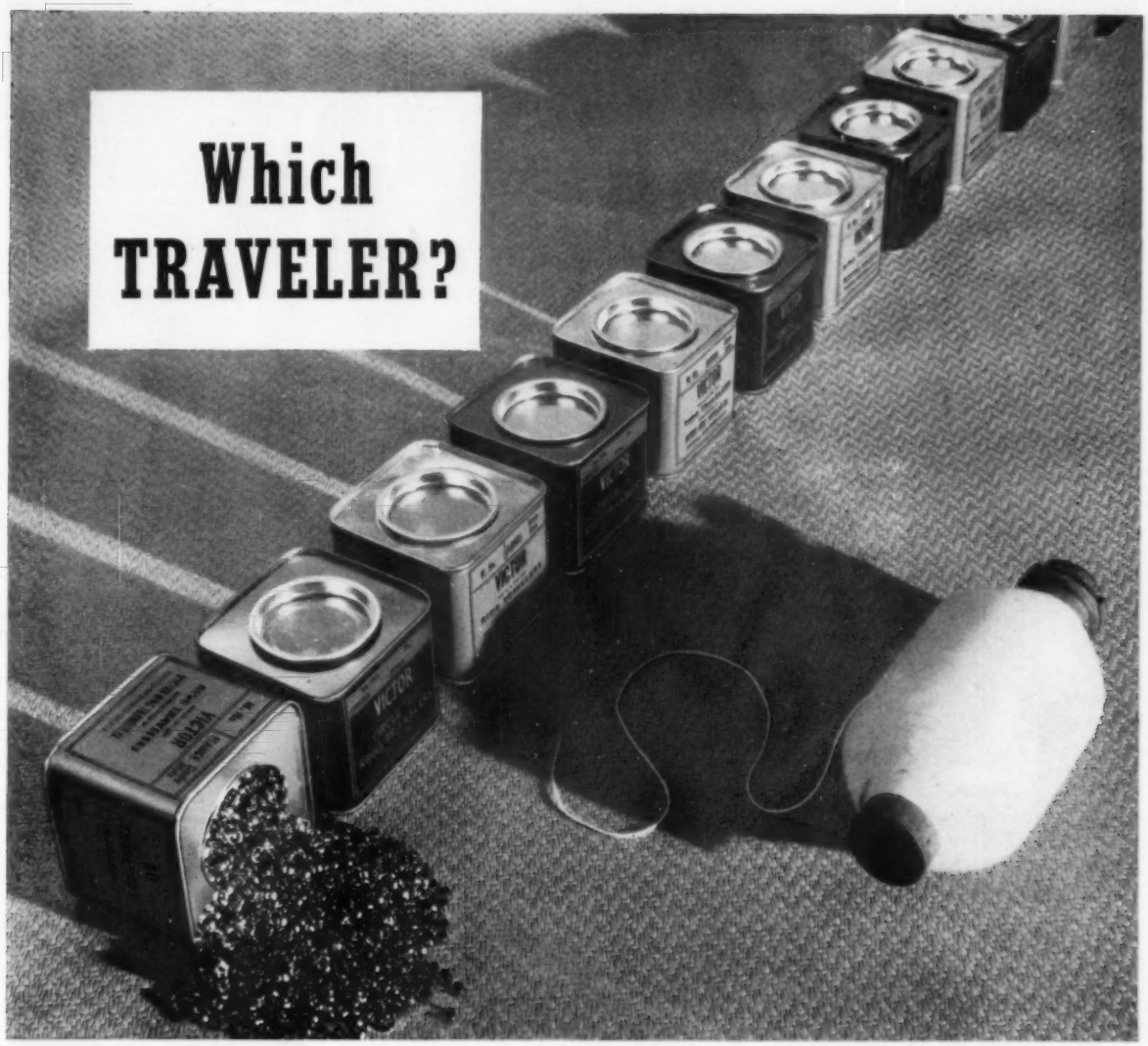
Circle T-52 on Reader-Service Card

Control System

A central control system to actuate on-off operations automatically without special control wiring is announced by International Business Machines Corp., 590 Madison Ave., New York 22, N. Y. The control systems will operate as many as 40 on-off functions such as switching on lights, starting and stopping motors, and opening and closing valves.

Circle T-53 on Reader-Service Card

CONTINUED ON PAGE 196



NO two fibers run exactly alike. For example, a 20's synthetic or blend yarn requires a traveler of a different size and type than that used in running cotton yarn of the same number, for best results in spinning.

"Guesswork" and haphazard probing to find the right traveler uses up valuable time, puts you "on the spot".

If your ends down are excessive, if your quality and production are off, make the *one* smart move that has helped so many mills gain greater productivity. Talk over your trouble with a Victor Service Engineer.

Mill-trained, every Victor Service Engineer is a *specialist* in traveler applications, has often helped clear up the most puzzling spinning and twisting problems. Whether you are running conventional fibers, synthetics, or blends — he can often make other valuable suggestions for improving yarn quality and production.

Write, wire or phone our nearest Victor office for prompt, friendly service. There's no obligation.

Keep a Step ahead with

VICTOR Ring Travelers

VICTOR RING TRAVELER DIVISION
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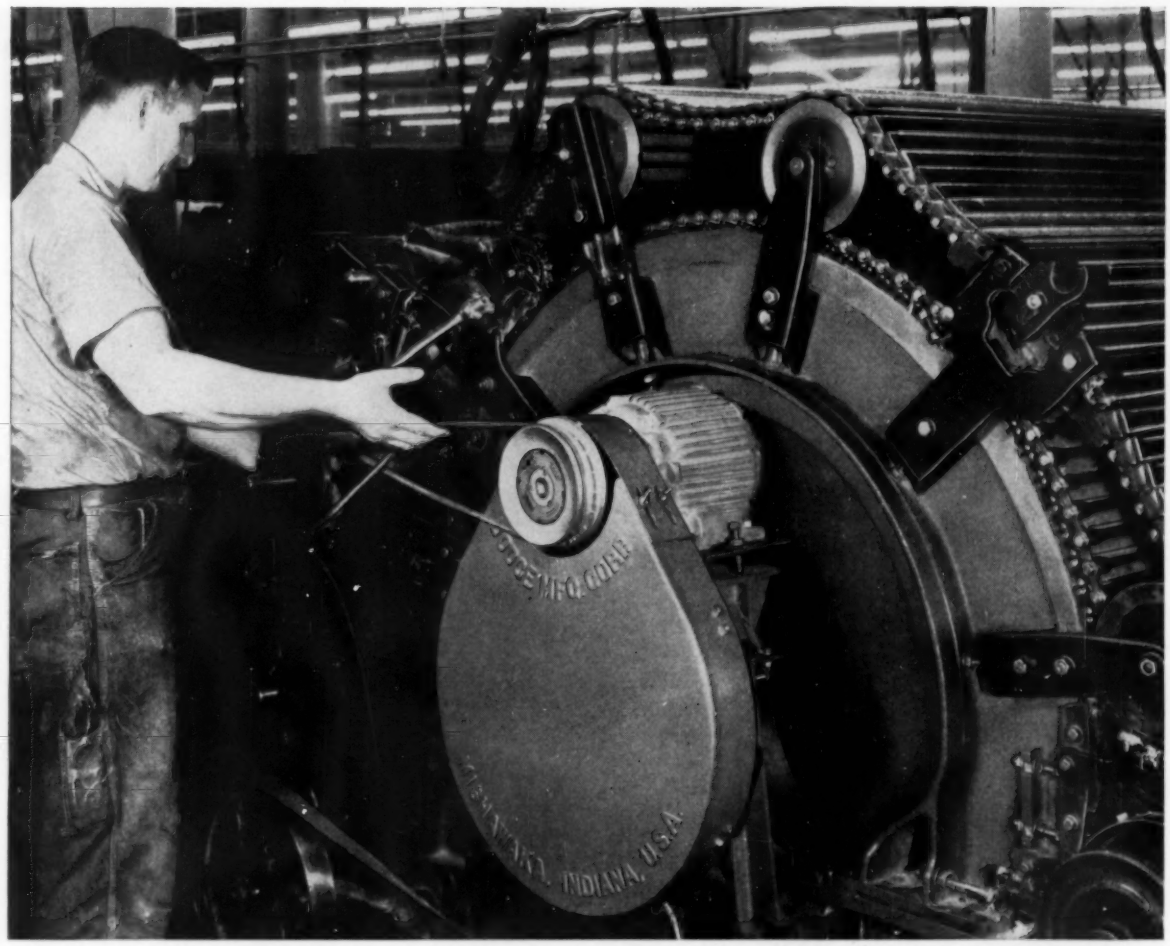


INDIVIDUAL CARD DRIVE GIVES SOFT STARTS

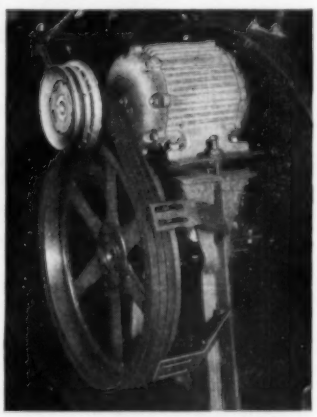
...ACCELERATES QUICKLY TO FULL SPEED

...AVOIDS EXCESSIVE STRAIN

Flexidyne, heart of this new complete Card Drive by Dodge, picks up the load smoothly . . . protects machinery and motor against shock and overload . . . delivers 100% efficiency during running cycle. Flexidyne, *the Dry Fluid Drive*, eliminates need for high torque motors and expensive controls, saves power, provides a new and better way to drive textile machines.

Note the special aluminum pulley mounted on Flexidyne housing, enabling quick, convenient operation of stripper. Pedestal has adjustable motor base to control tension on V-belts. You should have the full story of all the advantages of the new Dodge Flexidyne Card Drive. Ask your local Dodge Distributor, or write us, for new illustrated Bulletin A-653.

DODGE MANUFACTURING CORPORATION
1400 Union Street, Mishawaka, Indiana



NEW! FLEXIDYNE CARD DRIVE

A complete package, ready to install.

- Flexidyne, keyed to motor shaft
- Pedestal, supporting motor
- V-flat drive
- Aluminum stripper pulley
- Aluminum guard

DODGE
of Mishawaka, Ind.

CALL THE TRANSMISSIONEER, your local Dodge Distributor. Factory trained by Dodge, he can give you valuable assistance on new, cost-saving methods. Look for his name under "Power Transmission Machinery" in your classified telephone directory, or write us.

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7 *times the output!*

This sensational development for economy in production, time and costs means just that. Furthermore power consumption is reduced to a seventh.

THE SYDNEY & E. SCRAGG

FALSPIN

BULK STRETCH YARN UNIT

for fitting on new or existing machines, in one process surpasses the many other processes used in the manufacture of bulk stretch yarn, giving at least 7 times the output.
Overall Power Consumption per Machine is a fraction of that consumed by the normal Uptwister.
TORQUE stretch yarns in quantity, high speed false-twist method with precision quality control.
Production on 2 decks as in normal uptwisting.
Complete heat-setting gives maximum bulk and stretch.
Results equal to original multi-stage process.
Suitable for Processing NYLON, "TERYLENE", "PERLON", TRIACETATE.

Licensed Manufacturers of FLUFLON and AGILON MACHINES

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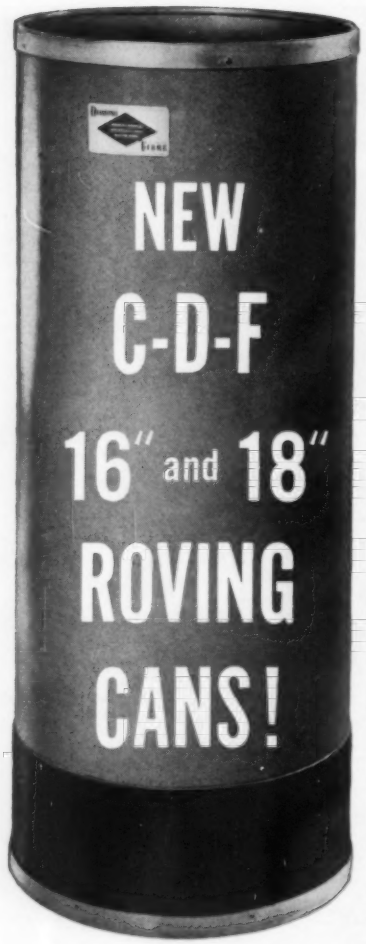


SEAMLESS!
SNAG-FREE!

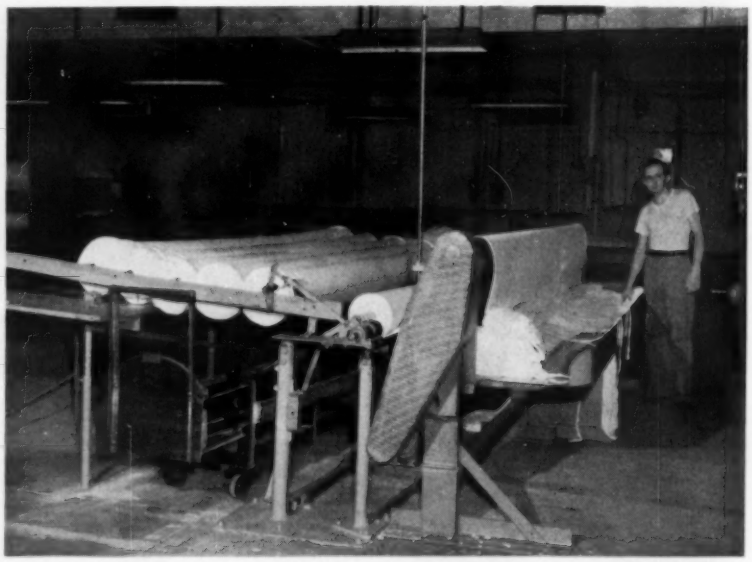
Now you can get Diamond Fibre Roving Cans in the big 16" and 18" diameters from regular stock at the Spartanburg plant-warehouse.

Static-free rolled fibre top rim for running synthetics; one-piece steel top rim; or swedged top rim—these meet all roving requirements.

CDF Diamond Fibre Roving Cans are smooth, strong, long-lived. Their interior surface, like porcelain, resists cracking and softening—won't snag yarns.

Make the CDF Spartanburg warehouse (834 Hayne Street, Spartanburg, S.C.—Tel. 3-6397) your headquarters for fibre and Celoron loom parts, gears, trucks, and mill boxes. Call Spartanburg or write for CDF Receptacles Catalog.

CDF **CONTINENTAL-DIAMOND FIBRE**
A Subsidiary of The Budd Company
Newark 55, Del.



UNROLLING DEVICE holds eight rolls of fabric that roll down the inclined rails to the unrolling position. The empty poles, on which the fabric is wound, drop into the truck below the table.

Celanese Corp. Speeds *TRICOT HANDLING—*

—with a device that unrolls fabric from the knitting machine without distorting the stitch construction. The device has reduced handling, made work easier, and speeded shipping.

TRICOT-FABRIC PACKING AND SHIPING have been improved at Celanese Corp. of America, Bridgewater, Va., with an unrolling device that was developed and built at the mill.

The device is used to unroll the fabric, which comes from the knitting machines wound on 168-in. steel poles. Each roll of fabric is laid on the table so the ends of the steel poles roll down the inclined rails on the table.

The inclined rails hold up to eight rolls of fabric, and the lowest roll moves into position ready to fall into the unwinding position. As each roll is unwound, the operator moves a lever to release the empty pole. The next roll of fabric on the inclined rail falls into the unwinding position. A long truck is parked underneath the table, and the empty poles fall into this truck as they are released.

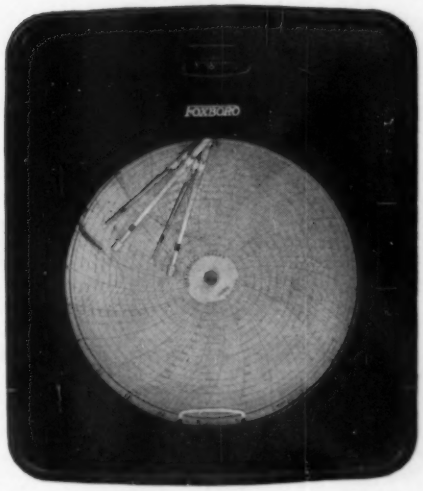
Fabric Stitch Is Not Distorted

The electrical drive that provides the power to unroll the fabric was designed to relieve strain on the fabric so that it does not affect the stitch construction. The drive turns the two wheels that turn the roll, and it reremoves the fabric from the poles and feeds it to a trough at the delivery end of the machine, where it is folded.

The fabric falls on tie bands placed in the trough and is tied in a bundle. After tying, the fabric is weighed and packed in cartons for shipment.

WET AND DRY BULB INSTRUMENTS

These Foxboro instruments give separate wet and dry bulb records on the same chart, in dry bulb ranges from 32°F. to 300° F. . . . higher temperatures if necessary. They are exceptionally accurate and stable. Bulbs can be placed up to 200 feet from the instrument. Available as recorders, or air operated (Model 40) and electric (Rotax) controllers, including multi-zone and time-humidity controllers.



DIRECT-READING DEW POINT INSTRUMENTS

Foxboro continuous dew point measuring instruments are based on the Dewcel,* a simple, highly accurate humidity sensitive element that needs no water box or moving air. Accuracy is unimpaired by dust or lint. Foxboro recording and controlling instruments, used with the "Dewcel", give direct readings from —50°F. to 142°F. dewpoint, at dry bulb temperatures up to 220°F. Readings easily converted to absolute or relative humidity. Foxboro instruments for dew point include liquid expansion type and electronic type recorders and controllers . . . with either pneumatic or electric control action. The Multi-Record Dynalog* for dew point provides up to 6 records on a single round chart.

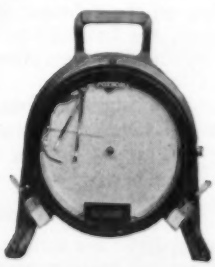
Reg. U. S. Pat. Off.

better measurement and control of humidity

DIRECT-READING RELATIVE HUMIDITY INSTRUMENTS

Direct-reading relative humidity hygroscopic instruments are designed to operate in temperatures up to 150°F. They are available for recording (including the portable model shown below), and controlling (pneumatic M-40, or electric Rotax, operated). Sensitive, accurate, reliable.

Combination recorders provide a continuous record of both temperature and relative humidity on the same chart.

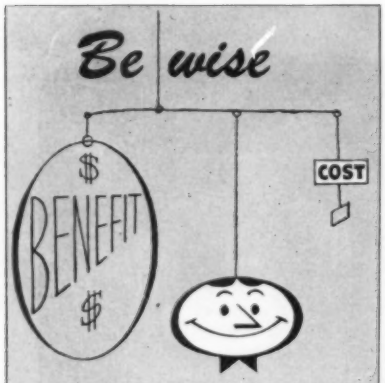


Ever since it introduced the first successful long-distance wet-and-dry bulb psychrometer, Foxboro has pioneered in the development of new and improved methods for the measurement and control of humidity. In its knowledge of textile process requirements, and its complete line of better-engineered instruments, there's more than likely the ideal solution to your own problem.

Why not write for complete information, or talk it over with your Foxboro Field Engineer, now? **The Foxboro Company, 848 Neponset Ave., Foxboro, Mass., U. S. A.**

FOXBORO REG. U. S. PAT. OFF. **HUMIDITY INSTRUMENTS**

For more data, write this page number on Reader-Service card. →



modernize the Precision Way

Precision has a complete "package" of modern high speed ball bearing units for every machine from opening to twisting. This "package" plan actually costs less than the usual practice of correcting individual trouble spots, and gives you higher production and better quality control. It also greatly reduces downtime and machine wear.

You get an extra economy bonus in Precision's Quantity Discount Plan. You place a blanket order for all your needs—at a quantity price—but you pay only as the "packages" are called out.

It will pay you

. . . in smoother running frames, higher production, and better quality yarn—to start your Precision Modernization program at once. Write today for full information or an engineering survey.

Precision Gear & Machine Co.
2001 N. Tryon St. • ED 4-6857
Charlotte 1, North Carolina

Ball Bearings for Spindles Require Precision Care

The first requisite of an antifriction bearing is accuracy in the bearing itself, such as holding to small tolerances of bores, outside diameters, widths, and eccentricities. Extreme uniformity of size in the rolling members in each bearing is necessary.

Then it is necessary to apply the bearing in such a way that maximum benefit of this accuracy is obtained in the machine in which it is used. Where extreme precision must be assured for shafts or spindles, deflection due to deformation of loaded parts must be reconsidered.

Such deformation takes place in any kind of bearing. But in ball bearings, because of the shape of the balls and raceway and the laws governing their elastic deformation, the rate of deflection shows a marked decrease with each additional load increment.

The Shaft Usually Rotates

Therefore if the initial or greater part of the deflection is eliminated by a predetermined load applied within the bearing, the deflection due to any external or work load is drastically reduced.

In most ball-bearing applications, the shaft rotates and the housing is stationary. However, in some instances such as various pulley and wheel mountings, the shaft is the stationary member. The following rule covers the fits to be used in both instances:

In general, ball bearings should be applied with the rotating ring a firm press or interference fit; the stationary ring should be applied with a close push fit. The degree of tightness or looseness for both types of rings depends on its service.

This rule is founded on the following essential facts:

1. Under normal load conditions, a press-fitted ring will not slip or turn on or in a rotating shaft or housing and there is no wear in the shaft or housing.

2. A bearing having one ring push-fitted and not clamped can move axially to avoid excessive thrust loads, such as might be caused by changes in shaft length from expansion.

3. Machines are generally assembled with greater ease where one of the bearing rings is a push fit.

Conditions Alter the Rule

The above rule is general and cannot be applied to all conditions. For very heavy vibratory or rotating loads, mounting fits for both the shaft and housing are made tighter.

Also for many precision applications, the stationary ring requires a fit closer than a push fit to avoid radial looseness and excessive deflection under load and to reduce creep. After a bearing runs for a short time under creeping conditions, the creeping results in an increased looseness of housing fit.

Single-row angular-contact bearings applied under a definite preload, either spaced apart or abutted as in duplex mountings, are frequently not fitted by the general rule. When these bearings are preloaded, a slight expansion occurs in the outer ring, which results in a tightening of the housing fit.

Bearings Expand After Fitting

Therefore for medium-size bearings, the bearing may be finished to give a very snug push fit for assembly; but when the bearings are preloaded after assembly, the ultimate fit may be 0.0001 in. tight. Because of this factor, adequate rigidity is obtained and yet assembly operations are facilitated.

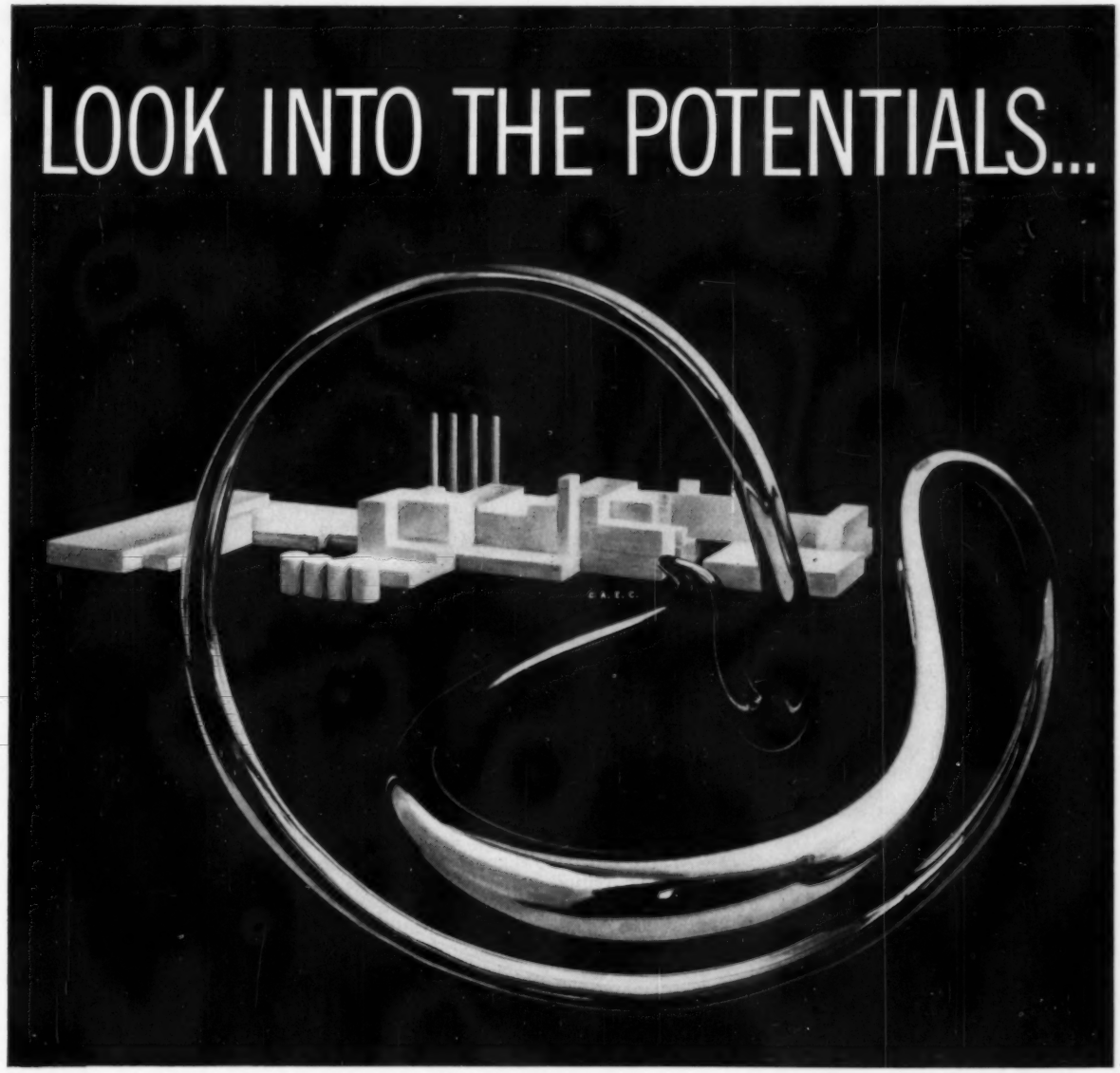
When a bearing is mounted on a shaft with a press fit, the inner ring expands with the amount of expansion depending on the tightness of the fit. As a result, the bearing has less end play or internal looseness after mounting.

For average conditions, bearings are supplied with enough internal looseness for the correct bearing fit-up at a press fit.

Details Are Needed for Orders

However, there are various applications where ball bearings are required to be tighter or looser than are ordinarily supplied. In such instances, you should not try to achieve this difference by mounting the bearing tighter or looser on the shaft. This practice

LOOK INTO THE POTENTIALS...



# of ENKA'S new rayon staple

As tangible evidence of its faith in the future of rayon staple, American Enka proudly announces the completion of the most modern staple plant in the world.

- **an important new domestic source of supply for users of spun rayon**
- **staffed by experienced technicians**
- **most advanced production facilities**
- **continuing research and development program**
- **prompt and efficient service**

With this new plant, Enka looks forward with confidence to further servicing the textile industry.

AMERICAN ENKA CORPORATION PRODUCERS OF JETSPUN® · FILAMENT AND STAPLE RAYON · FILAMENT AND STAPLE NYLON

530 Fifth Avenue, New York 36, New York • 428 Jefferson Standard Building, Greensboro, North Carolina
871 McCallie Avenue, Chattanooga, Tennessee • 2001 Industrial Bank Building, Providence, Rhode Island

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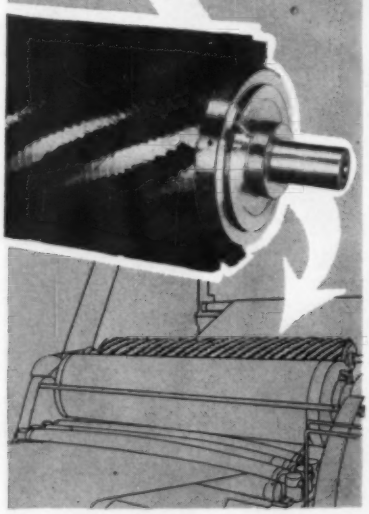
WHY JENKINS' METLKOR® BRUSHES are on JAMES HUNTER SQUEEZE ROLLS



A JAMES HUNTER SQUEEZE ROLL WITH JENKINS' METLKOR BRUSH

James Hunter Machine Co., North Adams, Mass., wanted a brush to stand up when removing acidified flock from their Carbonizer Squeeze Rolls. Jenkins' engineers designed a METLKOR brush with exposed metal parts of stainless steel and bristle of acid-resistant Nylon.

Mr. Frank B. Morrill, Chief Engineer, James Hunter Machine Co., says: ". . . we have been using Jenkins' brushes for flock removal on our Squeeze Rolls for years . . . they do a much better cleaning job than the brush previously used, and stand up several times longer . . ."

This top textile machinery manufacturer has proven the efficiency of Jenkins' METLKOR — the cylinder brush that lasts many times longer and can be re-bristled! If you have any standard or special brush problem, write us today.

Specify Jenkins' METLKOR
the original . . . the best Metal-Core Brush

METLKOR®
CYLINDER BRUSHES
and LIFEWOOD® WOOD BACKED BRUSHES

M. W. JENKINS' SONS, INC.
— Serving Industry for 80 Years —
231 Pompton Ave., Cedar Grove
Essex County, N. J. • CEnter 9-5150

results in mounting fits that affect bearing performance adversely.

Therefore when you are ordering bearings that require greater than normal tightness or looseness, give the manufacturer the complete details so that bearings with suitable internal characteristics may be furnished.

Housing bores must be within the recommended limits of diameter, and out-of-roundness should not exceed 0.0002 in. There should be no barrel shape or taper condition.

Align Housing Bores Closely

Check the alignment of front- and rear-housing bores with a bar equipped with two plugs. The squareness of the housing face is determined by a flange at the end of one plug. If the front-bearing outer ring is against a shoulder in the housing, check the shoulder for squareness with a close-fitting plug. A reasonably smooth housing-bore finish is imperative to maintain the original accuracy of fit.

Remove fins, core sand, and other foreign matter from the interior of castings. Be sure to clean cored oil pockets and the under sides of lugs to remove abrasive dirt. Inspect oil holes to be sure they aren't plugged.

After the casting is cleaned, apply a nonsoluble engine enamel to close the pores of the casting.

Spindles Demand Great Care

Ball bearings for spindles demand precision fitting and alignment. Before spindle bearings are mounted, inspect all components of both the housing and spindle to determine if they are within the specified limits of accuracy.

The diameters of spindle seats must be within the specified limits. If the original center holes are still in the spindle, mount the spindle on bench centers and indicate all surfaces for radial eccentricity and face run-out of shoulders.

Permissible errors can be determined only by such factors as the desired accuracy of the final mounting and its speed. Locking and preloading threads must be square with the spindle center line to prevent distortion and run-out when the nuts are tightened.

A spindle is usually distorted during heat treatment. Obviously threads turned on a spindle before heat treatment will not be square with bearing seats ground afterwards. If it is impractical to grind the threads, leave them soft enough to be chased from the original grinding centers after heat treatment.

Precision Alignment Is Needed

If the spindle is hollow, do not remove the center plugs from which the bearing seats have been ground until all the threads, nuts, and other parts are indicated for squareness.

All spacer faces must be parallel within 0.0002 in. and flat when they are checked on a surface plate. When outer and inner preloading spacers are to be of the same length, grind their faces in the same operation. The outer-ring spacer must be an easy sliding fit in the housing bore to prevent distortion. And for the same reason, the inner-ring spacer must be a sliding fit on the spindle.

It's important for the nut face to be squared with its thread. Mount the nut on a threaded arbor held between centers, and dress both sides square with the axis.

You can gain greater accuracy by reversing the position of the nut on the arbor several times during this operation. *New Departure, Div. of General Motors.*

Tow-Dyed Orlon

CONTINUED FROM PAGE 67

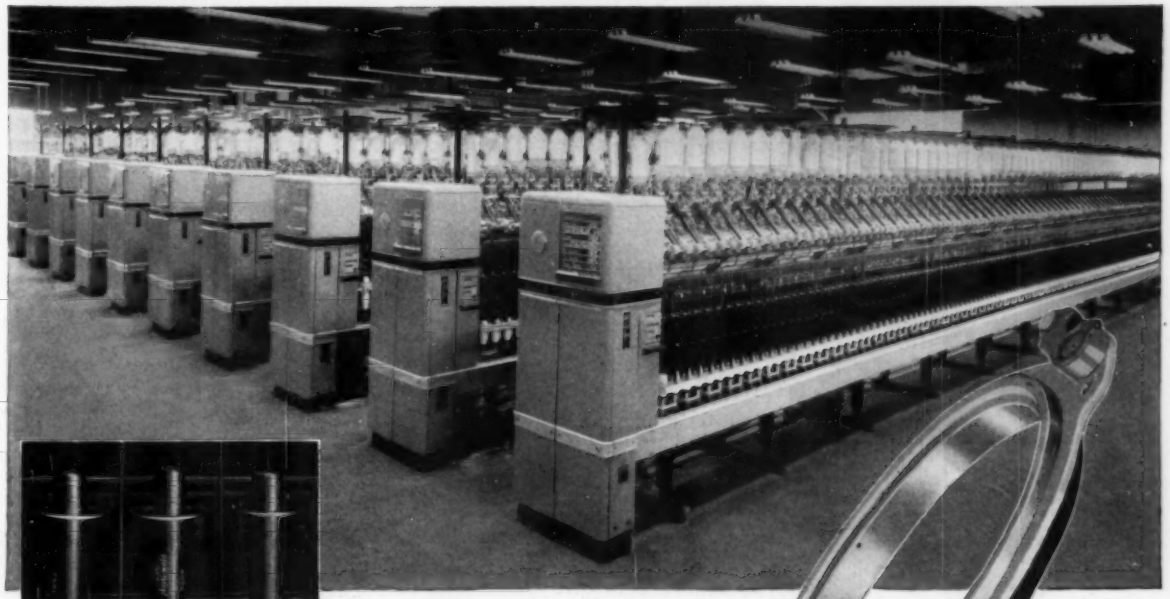
The bobbin length is 12 ins. with an 11-in. traverse. The drafting system has an inclination of 60° and is a pendulum double-apron system with three rows of bottom rolls that are 1¼, 1, and 1½ ins. in diameter. The front rolls are on ball bearings.

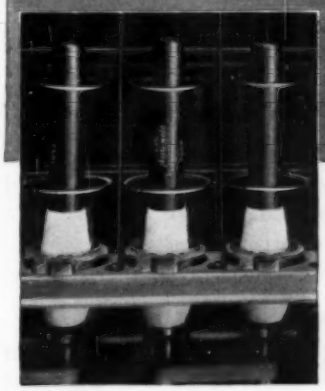
A draft of 15.5 is used for 26s high-bulk yarn, although drafts up to 25 are used. Yarns spun at French Worsted range from 16s to 40s, although 26s is the average yarn number spun. The drafting system has an adjustable and graduated pressure in front that is adjusted with a handle at the foot of the frame.

The ratch, which is set to 11 ins., is adjusted by a rack mechanism while the machine is stationary or in motion. Speed of the roller-bearing spindles is 4,600 rpm. A special drive starts the machine slowly.

The 26s yarn is spun from one end of 1.75 hk. roving and given 7 tpi. The average yarn unevenness on the Uster integrator is 10%.

DELAWARE MILLS





Says Mr. William C. Appleton, President of Delaware Mills, Inc., "We are well satisfied with our HERR Conical Rings both on spinning and twisting."

Herr Conical Rings are used on these new Saco-Lowell GWALTNEY Spinning Frames. They are also used on Delaware Mills — Universal Winding Company 10B Twisters.

The HERR Conical Ring provides ideal conditions for the spinning or twisting of any yarn.

Produce High Bulk Orlon at Increased Speeds and with Improved Quality by Using . . . .

HERR CONICAL RINGS

Equip with HERR Conical Rings and begin to enjoy these profit making features. You can speed up production, improve quality and lower costs with HERR Conical Rings. You'll gain too, many other advantages. They stop yarn breakage, permit heavier doffs, produce smoother yarns and reduce fly. You'll enjoy cleaner yarn because oil is not thrown off. Frames and room floors stay cleaner. Travelers last longer because oil is carried in capillaries to ring surfaces. Maximum spindle speeds are achieved.

Learn more about these wonder rings. Write today for descriptive literature.

FOR SPINNING AND TWISTING WORSTED, WOOLEN, RAYON, NYLON, ORLON AND BLENDED YARNS OF ALL TYPES

HERR MANUFACTURING CO., INC.

309 Franklin St., Buffalo, N. Y.

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NOW—CHECK ACCURACY WHILE YOU CHECK MOISTURE!

New Electronic Moisture Registers have first "built-in standard" in a 3-second, portable moisture tester.

NOW DIAL ACCURACY IS ASSURED, even under the extremes of production-line use. With *self-checking standard*, Moisture Register's new Model 5's are checked and adjusted for calibration accuracy right on the job—by any untrained operator. He simply fits electrode to standard. Then with new trimmer he sets dial for perfect alignment. Gives calibration adjustment *in the field*. You get practical accuracy down to 0% ... 3-second spot tests for moisture wherever your product may be. Portable, light weight, battery operated, new rugged construction with miniature tube. Factory-set to your needs.

For faster testing of—

- Wool, Cotton, Rayon, Nylon, Dacron, Orlon—practically any textile.
- Yarn: cones, beams, skeins.
- Fabrics: loose or compressed.

SEND FOR NEW TECHNICAL DATA and information on 2-week free trial.

ELECTRONIC MOISTURE REGISTER *Instruments*

Moisture Register Company, Dept. TW
P. O. Box 910, Alhambra, California
Please send data on new Model 5's.

We are testing _____

in moisture range from ____% to ____%

Firm _____

By _____ Title _____

Address _____

City _____ State _____

CONTINUED FROM PAGE 186

Industrial Camera

Eastman Kodak Co., Rochester 4, N. Y., announces a turret model of its K-100 roll-film movie camera that is well suited for industrial use. Equipped with three Ektar lenses and matching view-finder lenses, instant changes from standard to wide-angle to telephoto shots are possible.

Circle T-54 on Reader-Service Card

Multipurpose Valve

Ross Operating Valve Co., Detroit, Mich., announces a multipurpose valve in compact and lightweight form. Called the Comet II, the valve can be used for such operations as air riveting, welding, transfer mechanism, testing fixtures, etc.

Circle T-55 on Reader-Service Card

Safety Controller

A device to give warning of abnormal load conditions on electrically driven conveyor systems is available from the Tipp Mfg. Co., Tipp City, Ohio. Called the Tipp-Tronic, the device eliminates the need of shear pins, slip clutches, and other mechanical safety devices.

Circle T-56 on Reader-Service Card

Paint-Mixing Machine

An agitating-force machine for mixing paints, synthetic lacquers, and industrial finishes has been announced by Red Devil Tools, Union, N. J. You just place an unopened can of paint between clamps, and the paint is mixed thoroughly.

Circle T-57 on Reader-Service Card

Demineralizer

Water can be demineralized instantly by a portable unit made by Crystal Research Laboratories, Inc., 29 Allyn St., Hartford, Conn. The demineralizer attaches directly to a water faucet and produces up to 2 gals. per min. of ion-free water. Two models with capacities of 1,750 and 900 grains (as NaCl) are available.

Circle T-58 on Reader-Service Card

Pallet Loader

Lamson Corp., Syracuse 1, N. Y., has announced a low-capacity fully automatic pallet loader to meet the needs of the producer who has a production rate too low for a standard high-speed pallet loader.

Circle T-59 on Reader-Service Card

Liquid-Petroleum Trucks

Lift trucks operated by liquid-petroleum gas are being built by Yale & Towne Mfg. Co., 11,000 Roosevelt Blvd., Philadelphia 15, Pa. The truck capacities are 2,000 to 10,000 lbs. The trucks are said to offer savings in fuel consumed, longer engine life, and longer parts life.

Circle T-60 on Reader-Service Card

Spray Cools Hot Bearings

Hot bearings from dirt or excessive grease on textile machines can be cooled by spraying the shaft with a solution made by Chesterton Co., 2 Ashland St., Everett 49, Mass. The solution comes in 12-oz. pressurized cans.

Circle T-61 on Reader-Service Card

Power Bus-Way System

A bus-way system permitting direct connection to bus bars for feeding lighting and power loads is announced by Distribution Assemblies Dept., General Electric Co., Plainville, Conn.

Circle T-62 on Reader-Service Card

Protective Ointment

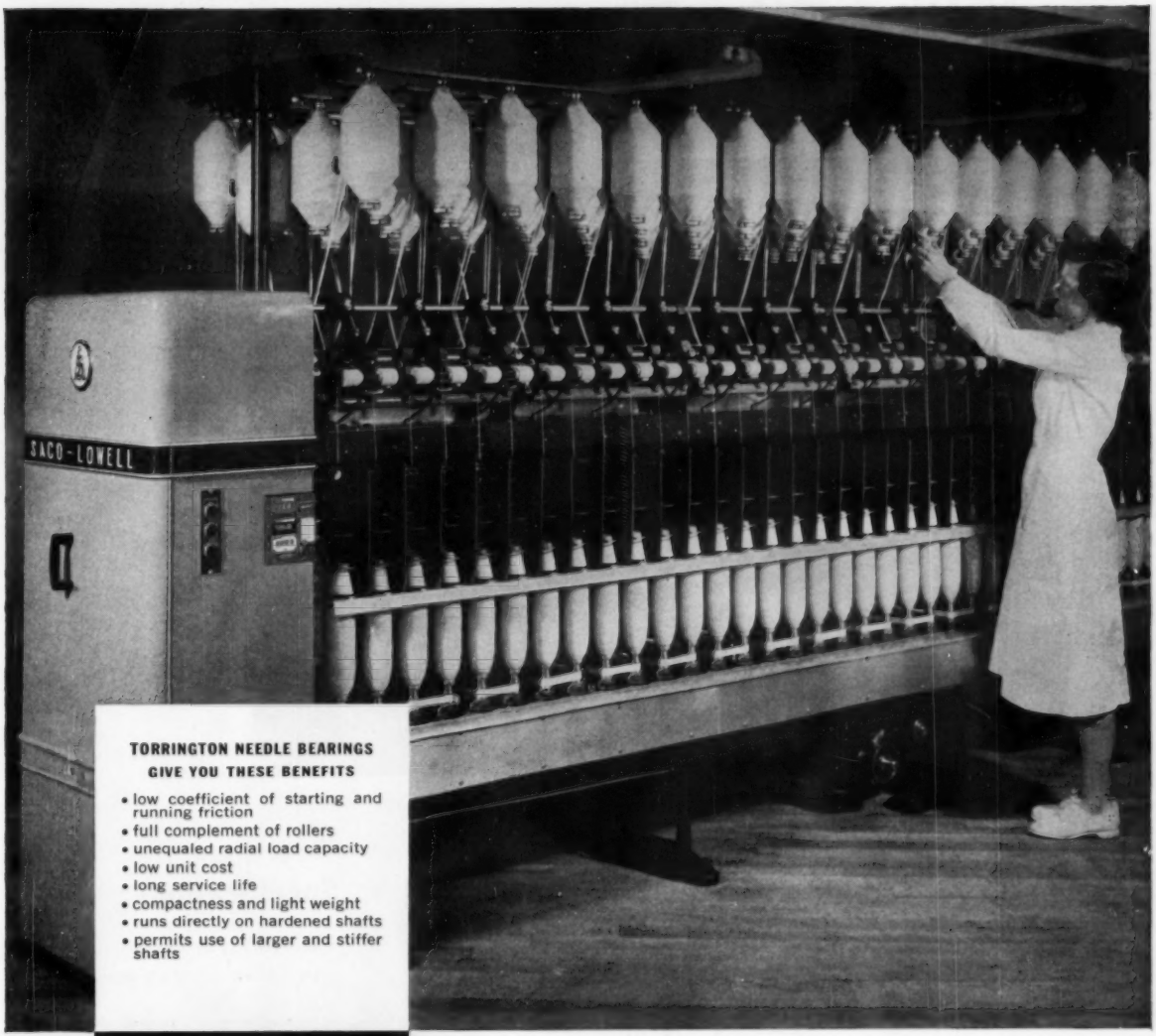
Silconex, produced by Hygiene Research, Inc., 684 Broadway, New York 12, N. Y., protects workers against industrial dermatitis. The product is based on silicone and protects against water- or oil-borne materials. It is inert to acids, alkalis, and many other chemicals.

Circle T-63 on Reader-Service Card

Unloading Crane

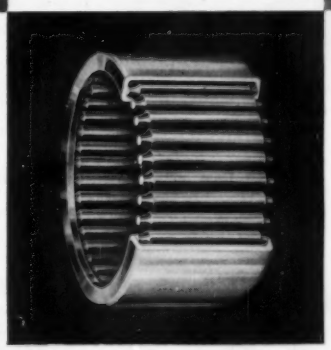
Ten different movements are made by a boom-type crane for unloading trucks. The movements are all controlled from a push-button station. The crane is made by American MonoRail Co., 13,107 Athens Ave., Cleveland, Ohio.

Circle T-64 on Reader-Service Card



TORRINGTON NEEDLE BEARINGS GIVE YOU THESE BENEFITS

- low coefficient of starting and running friction
- full complement of rollers
- unequaled radial load capacity
- low unit cost
- long service life
- compactness and light weight
- runs directly on hardened shafts
- permits use of larger and stiffer shafts



1,848 hidden helpers speed large package spinning

High-speed, large package spinning of roving or sliver into yarn was introduced with the Saco-Lowell Spinning Frame Model SG. Among many refinements contributing to its speed and efficiency are anti-node balloon control rings to permit higher ring traveler speeds, and the extensive use of Torrington Needle Bearings.

In all, 1,848 Needle Bearings are used in lifter pulleys, draft gearing, top rolls, roll joints, builder and lifter motions. In every application, these "hidden helpers" insure efficient anti-friction operation at high spindle speeds and drastically reduce the frequency of relubrication, thus minimizing down time and risk of yarn spoilage.

Torrington Needle Bearings have made possible many important refinements of design and operation in all kinds of textile equipment. This experience is available, through our Engineering Department and your Torrington representative, to help you improve your products. *The Torrington Company*, Torrington, Conn.—and South Bend 21, Ind.

TORRINGTON BEARINGS

District Offices and Distributors in Principal Cities of United States and Canada

NEEDLE • SPHERICAL ROLLER • TAPERED ROLLER • CYLINDRICAL ROLLER • NEEDLE ROLLERS • BALL • THRUST

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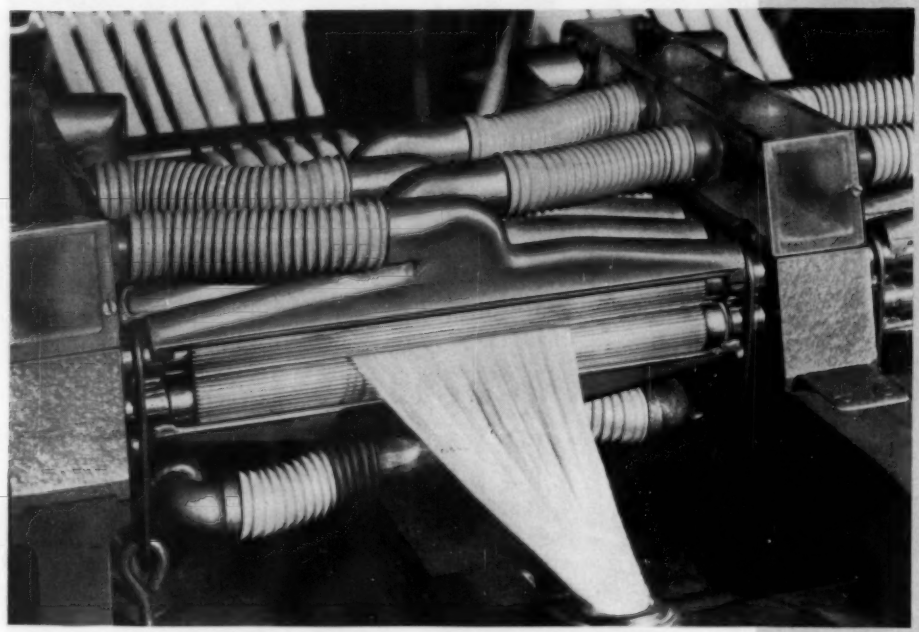
It's New! Vacuum Cleaning* for *Feathertouch* Drafting



New in Principle
New in Efficiency

Like the rest of the Feathertouch Drafting System, our Vacuum Cleaning relies on new scientific design for its exceptional results. It gently picks up dirt, trash, and fly, FROM THE ROLLS instead of sucking them forcibly out of the web. Test frames, in ordinary mill operation show the following results.

LESS STAPLE WASTE Tests show that using vacuum *on the rolls* instead of on the web saves greatly on staple pick up. Less than 1% of the collected waste consists of good staple.

CLEANER SLIVER Although exact records were not kept, the amount of dirt, trash, and fly far exceeded the normal percentage of such cleanings.

LESS LAP UPS Individual roll cleaners and instant knock-off action greatly reduce lap ups.

90% LESS CLEANING TIME No bottom or top clearers to pick.

ELIMINATES SLUBS

INCREASED PRODUCTION The Vacuum Cleaning System permits fuller utilization of Ideal Feathertouch Drafting's tremendous potential speed. Records show a production of 2,100 yards every 17 minutes —370 feet per minute.

*Pat. Pending

Specifications:

1. Each roll has an individual close-fitting, full-length cleaner.
2. Each delivery has an individual plastic viewing section for visual observation of performance.
3. Each frame has its individual vacuum system and collector box.
4. Does not increase frame height.

Ideal Industries, Inc.
Bessemer City, N. C.

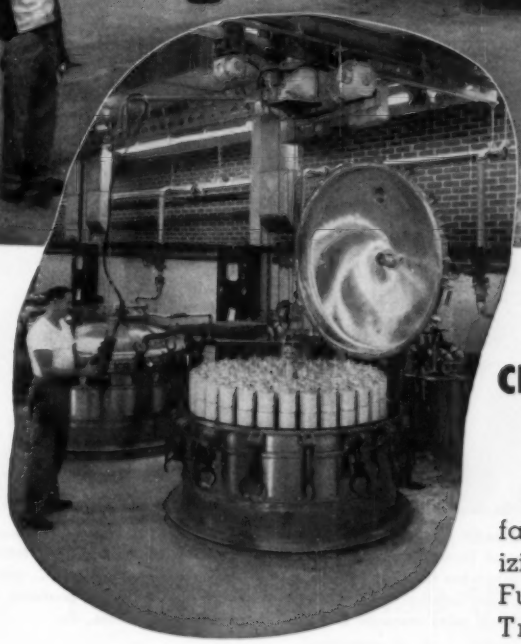
← For more data, write this page number on Reader-Service card.

One of five 2-ton, 37'-4" long completely motorized Cleveland Tramrail cranes at Coats & Clark, Inc., Toccoa, Georgia Speeds: Crane travel 150 fpm, carrier travel 75 fpm, hoist 6 and 20 fpm. Safe electrification is obtained by use of Cleveland Tramrail SAFPOWRBAR conductors.

A JOB WELL DONE

Here is how Coats & Clark feel about the Cleveland Tramrail installation, as expressed in a letter from Mr. L. P. Greer, Jr., Chief Engineer, to Mr. J. C. Wilkins of Cleveland Tramrail Atlanta Company:

"There comes a time on a job when one must sit down and take stock of those who deserve praise and recognition for their efforts in making the job successful. During the course of this job, it has been extremely satisfying to have dealt with you and Cleveland Tramrail on the overhead crane handling system. I wish to extend to you my sincerest thanks for a job well done."



The advanced control equipment provided for crane travel motions and hoist enable easy accurate spotting of a load and smooth ca.e-ful lowering into a kier.

CLEVELAND TRAMRAIL CRANES SERVE COATS & CLARK TOCCOA MILL

Bleaching, dyeing and drying operations are fast, easy one-man jobs at the new Thread Mercerizing Plant of Coats & Clark, Inc., Toccoa, Georgia. Fully motorized, push-button-operated Cleveland Tramrail cranes eliminate the need of any heavy manual lifting and enable handling large production units and thereby bring about increased efficiency.

GET THIS BOOK!

BOOKLET No. 2008. Packed with valuable information. Profusely illustrated. Write for free copy

CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
8481 EAST 287TH ST. WICKLIFFE, OHIO

CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

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UTICA Combination Winding and Cutting Machine

To meet your special requirements, ask for information on Heavy Duty Model — also Utica Individual Roll Winders and Strip Cutters.

1 machine does the work of 2

THIS fast-producer has all the advantages of two machines, but uses the floor space of just one. Cuts light, medium, or heavy weight, both straight and bias fabrics. Cutter and Winder can be run at the same time. Rigidly constructed for long, trouble-free operation. Has measuring scale for cutting accurate rolls. It's safe—knife, grinding wheel, all gears and sprockets are well-guarded. Equipped with Veeder Root yardage counter. Made in 40, 45, and 55 inch width machines. Make your own bindings—as you need them—from the same material as your product—at lower cost. Write today.

UTICA

NOVELTY AND MILL SPECIALTY CO.

2145 DWYER AVE., UTICA 2, NEW YORK

Builders of Textile Machines Since 1903

How Metallizing saves money in textile mills

cuts machine repair costs 80%— cuts equipment "down-time"— permits reduced spare parts stocks

Practically any worn machine part—repaired for only 15 or 20% of replacement cost—in minutes and hours, instead of days or weeks.

Worn Equipment and Parts

Drive shaft journals	Top rolls, necks and centers
Roll journals and surfaces	Slasher roll surfaces and journals
Spindle tops and whorls	Blanket roll journals
Calender rolls and journals	Sand roll surfaces and journals

The list of metallizing users in the textile field reads like a Blue Book of the industry. Here are just a few:

Cannon Mills	Deering-Milliken	Bib Mfg. Co.
Dan River Mills	Greenwood Mills	Bruck Mills (Canada)

Write today for further information or a call by a full-time, company-trained Metco field engineer in your territory.

METCO

Metallizing Engineering Co., Inc.

1159 Prospect Ave., Westbury, L. I., New York • cable: METCO

Telephone: EDGEWOOD 4-1300

In Great Britain: METALLIZING EQUIPMENT COMPANY, LTD.—Chobham near Woking, England

NEWS ABOUT SUPPLIERS

A.S.R. PRODUCTS CORP., New York, N. Y.—Has acquired all capital stock of Com-Air Products, Inc., Los Angeles, Calif. . . . **AIR REDUCTION CO.**, New York, N. Y.—Has broken ground for an addition to its research laboratories in Murray Hill, N. J. The new wing will be used to house polymer-research facilities. . . . **ALLIED CHEMICAL & DYE CORP., NATIONAL ANILINE DIV.**, New York, N. Y.—Has announced that a new fiber-application laboratory has been opened in Chesterfield, Va. The division has also made the following appointments: Paul J. Sullivan, resident manager of the Philadelphia sales branch; Leslie C. Wizeman, manager, detergent sales; Edward J. Allard, resident manager for New England; Michael E. Keane, assistant resident manager in the Boston sales branch.

AMERICAN ENKA CORP., Enka, N. C.—Has announced that its nylon facilities will be expanded at an estimated cost of $5,000,000. . . . **AMERICAN VISCOSE CORP.**, Philadelphia, Pa.—Has announced the introduction of a new continuous-filament rayon fiber, a new Super Rayflex-type yarn. . . . **ARMSTRONG CORK CO.**, Lancaster, Pa.—Has made the following appointments: William P. Brinton, Jr., Chicago; Richard L. Forrester, Detroit; John S. Gebbie, Greenville, S. C.; Donald J. Kolb and Thomas B. Porter, New York City; Donald H. Saum, St. Louis. . . . **ASKANIA REGULATOR CO.**, Chicago, Ill.—Has appointed E. C. Deshautreau, Jr., Kenner, La., and Walter C. Carolan Co., Kansas City, Mo., as sales representatives in the New Orleans and Kansas City regions.

RICHARD L. BERNARD (left) has been appointed Southern representative of David Gessner Co., Worcester, Mass. FREDERICK R. MATTHEWS (center) has been named manager of the new Greensboro, N. C., plant of Dow Corning Corp. ROBERT L. RICE (right) has been promoted to general sales manager of Fischer & Porter Co., Hatboro, Pa.

ATLANTIC STEEL CO., WAREHOUSE DIV., Atlanta, Ga.—Has announced the opening early this month of a branch office and warehouse in Birmingham, Ala. Initially, it will stock only Kaiser Aluminum products. . . . **BAKER-RAULANG CO.**, Cleveland, Ohio—Has named Allied Equipment Co., Peoria, Ill., and L. A. Whitney Co., Inc., Needham, Mass., distributors. . . . **BALLYMORE CO.**, Wayne, Pa.—Has moved its headquarters to West Chester, Pa. . . . **BENDIX AVIATION CORP., ECLIPSE MACHINE DIV.**, Elmira, N. Y.—Has promoted Nelson H. Mageoch to assistant general manager. . . . **THE BRISTOL CO.**, Waterbury, Conn.—Has recently moved its Pittsburgh, Pa., district office into a new building at 2250 Noblestown Rd.

THE BULLARD CLARK CO., Danielson, Conn.—Has elected Edward J. Bullard chairman of the board of directors. Jack D. Lodge succeeds Mr. Bullard as president and treasurer. . . . **H. W. BUTTERWORTH & SONS CO.**, Bethayres, Pa.—Has announced an accelerated program of research and development in the field of new machinery for wet textile finishing,

Clear sparkling colors produced with more economical dyestuffs are among the advantages assured by use of TEN-O-FILM Starches.

For a clear size that enhances **COLOR** use **TEN-O-FILM®** starches

For use with the new quick curing or polymerizing resins, you'll find no equal to TEN-O-FILM Starches.

Available in a range of fluidities to meet any required fabric stiffness, these unique starches retain their free-flowing characteristics at the lower temperatures employed in finishing.

Also, because both sizing and desizing operations using TEN-O-FILM are conducted at lower temperatures, with "bleeding" thereby reduced, yarns can be dyed with more economical dyestuffs.

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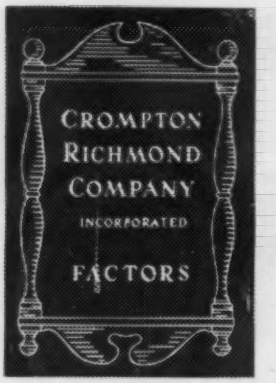

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When you're factored by Crompton, you have no receivables (we turn them into cash on a daily basis). Your bank balances become larger and enable you to liquidate your payables that much sooner. Unless you're unusually extended in production and raw goods, you have no need for banking loans.

Such a clean situation is enormously attractive to creditors and financial agencies: for what else is there to do with the daily cash that comes from Crompton Factoring except discount your payables, expand your volume, and increase your surplus? You have no risk of credit loss in your receivables, and no expense of credit extension and collection.

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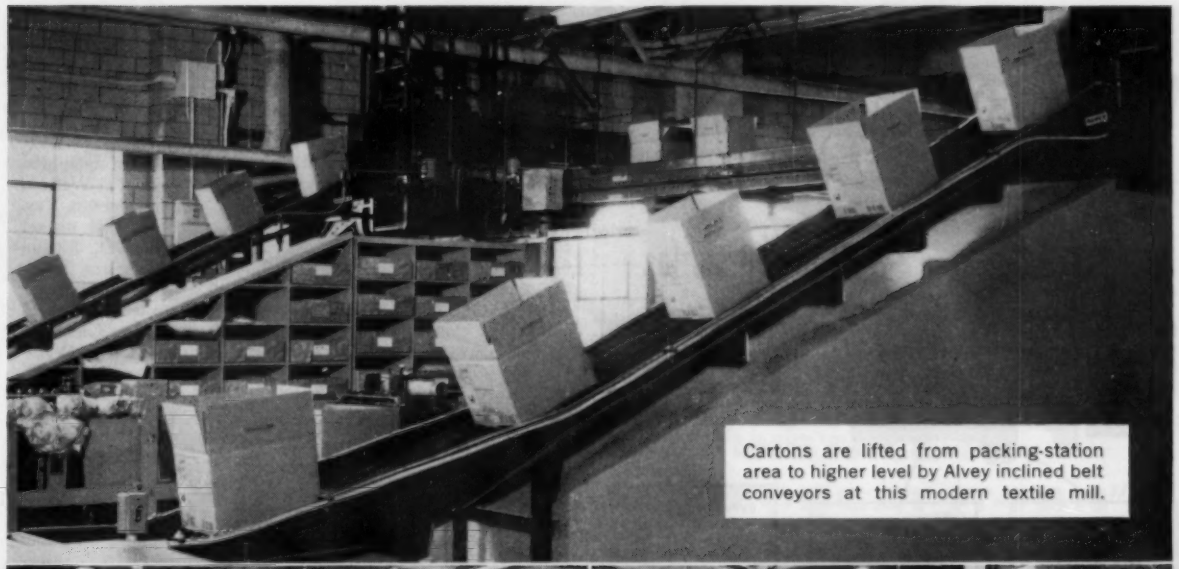
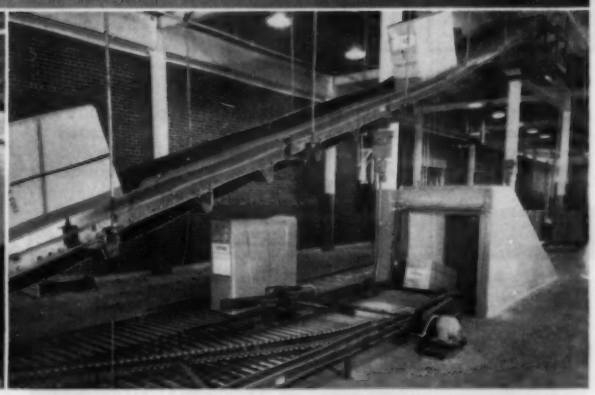
including an emphasis on new methods of dyeing, bleaching, and washing. . . . **CELANESE CORP. OF AMERICA**, New York, N. Y.—Is expanding its chemical terminal facilities at Rock Hill, S. C., to provide storage space and new shipping services for its formaldehyde products and solvents. . . . **CHEMSTRAND CORP.**, Decatur, Ala.—Has announced that a company to manufacture acrylic fiber in Japan has been formed jointly by Chemstrand Corp., U. S. A., and Mitsubishi Rayon Co. Ltd., Japan. The company has also made the following appointment: W. R. Sittason, purchasing agent for the new Acrilan plant in Decatur; Rudolph J. Wojtowicz, Dedham, Mass., sales office; Jacobus Sanger, technical sales representative. . . . **CLINTON CORN PROCESSING CO., DIV. OF STANDARD BRANDS, INC.**, Clinton, Iowa.—Has opened its new research laboratory. . . . **CRUCIBLE STEEL CO. OF AMERICA**, Chicago, Ill.—Has opened its expanded specialty-steel warehouse at 4501 W. Cortland St. . . . **DEWEY & ALMY CHEMICAL CO., DIV. OF W. R. GRACE & CO.**, Cambridge, Mass.—Has appointed three new sales representatives: Cornelius F. Sullivan, New England; William A. Morton, Chicago; James H. Aungst, Atlanta. . . . **FERGUSON GEAR CO.**, Gastonia, N. C.—Has opened a sales and engineering office in Savannah, Ga. . . . **THE FRAZIER PRECISION INSTRUMENT CO.**, Silver Spring, Md.—Is continuing the business of the late Sherman W. Frazier for the manufacture of textile testing and research instruments.

NEW CORPORATE SYMBOL of Corn Products Refining Co., New York, N. Y., is accepted by William T. Brady, president of Corn Products, (left), from Harley Earl, head of the industrial design firm that created the trademark.

GENERAL ELECTRIC CO., SILICONE PRODUCTS DEPT., Waterford, N. Y.—Has named S. F. Long manager of the Chicago district sales office. . . . **GOODYEAR TIRE & RUBBER CO.**, Akron, Ohio—Has promoted E. A. Olander to manager of merchandise and materials control at its Lincoln, Neb., plant. . . . **HEYDEN NEWPORT CHEMICAL CORP.**, New York, N. Y.—Is building a new plant at Pensacola, Fla., to produce terpene alcohol esters. . . . **E. F. HOUGHTON & CO.**, Philadelphia, Pa.—Is expanding its manufacturing facilities in Detroit. . . . **HYDE-RAKESTRAW CO.**, Philadelphia, Pa.—Has merged with Schell Longstreth & Co., also of Philadelphia. . . . **INTERCHEMICAL CORP., TEXTILE COLORS DIV.**, Hawthorne, N. J.—Has announced that its New England headquarters are now located at 201 Armistice Blvd., Pawtucket, R. I.



Cartons are lifted from packing-station area to higher level by Alvey inclined belt conveyors at this modern textile mill.



At left, cases are weighed and checked along spur branch lines, then moved onto belt conveyor en route to storage or shipping. "Traffic cop" (at right) assures smooth textile traffic flow by giving right-of-way to one packing case and halting the other until intersection is clear.

in textile mills . . . profits get a big lift . . . when you install an ALVEY conveyor system

Your profits just naturally *go up* . . . because your materials handling costs *go down* . . . when you install a completely integrated, Alvey-Engineered conveyor system. Bales . . . bolts . . . bobbins . . . doff boxes . . . rolls . . . cartons . . . all move smoothly, efficiently, safely, via Alvey. Thoroughly experienced in textile mill operations, Alvey engineers apply their training and skill in analyzing your plant operations. Then, they recommend a conveyor system that meets your needs.

Lower your handling costs, speed up production, and widen your profit margin . . . call in an Alvey engineer to study your individual problem. There's *no obligation* for *consultation!*

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ASSEMBLY PLATE — Holds internal parts in position when head is removed.
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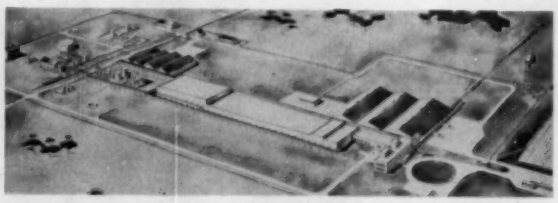
NEWS ABOUT SUPPLIERS Continued

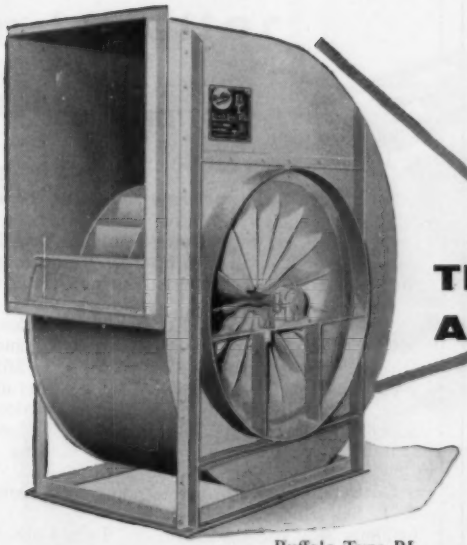
INTEX CHEMICAL CORP., Lodi, N. J.—Has appointed William B. Mason sales manager for the Mid- and Far-Western Div. . . . **JEFFERSON CHEMICAL CO., INC.**, Houston, Tex.—Has announced the formation of a new division to market caustic soda and other alkalis. . . . **KIDDE MFG. CO.**, Bloomfield, N. J.—Is opening a new sales office in the Johnston Building, Charlotte, N. C. D. L. Friday has resigned as Southern sales manager. . . . **LAMSON CORP.**, Syracuse, N. Y.—Has announced the appointment of Earl D. Hoyt as Cleveland regional manager. . . . **LUDELL MFG. CO.**, Milwaukee, Wis.—Has appointed Joseph N. Peters as sales manager of the firm's Wheeler Washer Div. . . . **OLIN MATHIESON CHEMICAL CORP.**, New York, N. Y.—Has relinquished to Fischer & Porter all sales and manufacturing rights to equipment for generation of chlorine dioxide from sodium chlorite. . . . **PEERLESS PUMP DIV., FOOD MACHINERY & CHEMICAL CORP.**, Los Angeles, Calif.—Has appointed Everett W. Lundy to general sales manager. . . . **S. B. PENNICK & CO.**, New York, N. Y.—Has acquired the Aromatic Chemicals Compounding Dept. of Dow Chemical Co.



AMERICAN CYANAMID CO., New York, N. Y., has broken ground for this plant near Pensacola, Fla., for the production of its new Creslan acrylic fiber. The plant is scheduled for completion late in 1958.

RAYBESTOS-MANHATTAN, INC., PLASTICS PRODUCTS DIV., New York, N. Y.—Has established a Pacific Coast division to manufacture Teflon and Raylon products in Paramount, Calif. . . . **JOSEPH T. RYERSON & SON, INC.**, Chicago, Ill.—Has appointed Clive C. Earle sales manager of the Buffalo plant. . . . **SQUARE D CO.**, Cedar Rapids, Iowa—Has named Paul R. Shawver manager. . . . **THE STANLEY WORKS**, New Britain, Conn.—Has opened a new Stanley Steel Strapping factory and office building. . . . **STEDCO-SOUTHERN, INC.**, Greensboro, N. C.—Has announced that the sales and servicing of automatic loom bobbins and other allied products will be handled exclusively by the Steel Heddle sales organization. . . . **STOWE-WOODWARD, INC.**, Newton, Mass.—Has appointed David T. Barry director of marketing.

UNION CARBIDE CORP., New York, N. Y.—Has announced plans to build a chemical plant in Putnam County, West Va., to be completed in 1960. . . . **UNITED STATES RUBBER CO.**, New York, N. Y.—Has appointed Henry Davis, Jr., assistant manager of branch sales for the mechanical goods division. Frederick T. Hopkins has been appointed sales manager of industrial yarns and fabrics for the textile division. . . . **UNITED STATES STEEL CORP.**, New York, N. Y.—Has appointed William J. McKee assistant vice president in charge of sales in the National Tube Div. Robert E. Williams has been appointed general manager of sales, succeeding Mr. McKee. . . . **WEST POINT FOUNDRY & MACHINE CO.**, West Point, Ga.—Has appointed Robert V. Lee district sales manager, representing the company in North Carolina, South Carolina, and Virginia. . . . **YALE & TOWNE MFG. CO.**, Philadelphia, Pa.—Has appointed James Rainey district sales manager for the south central United States. Eben C. Hall has been appointed manager of the New York office maintained by the Export Dept., Materials Handling Div.



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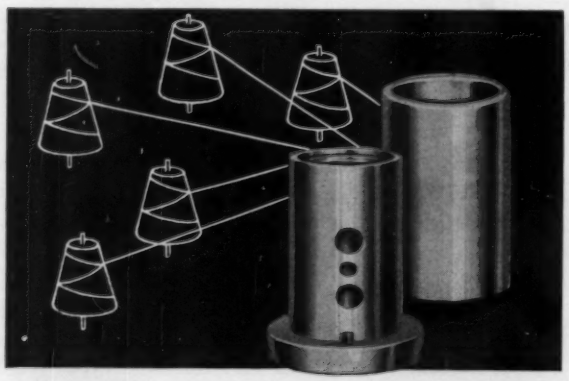

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Johnson Textile Bearings

COTTON MILLS

Bates Mfg. Co., Lynchburg Div., Lynchburg, Va., is closing after finishing current production. The York division of the company is in the process of running out warps.

Carlton Yarn Mills, Carlon Div., Kings Mountain, N. C., is modernizing 12 Whitin spinning frames with Whitin Super-Draft. A total of 3,312 spindles is involved.

Coats & Clark, Pawtucket, R. I., has sold six more of its buildings to a realty company for $310,000. The sale will have little effect on the company's operations because some of the buildings have not been used for years.

Cosmos Imperial Mills Ltd., Yarmouth, N. S., is preparing to build an addition 200x28x-67 ft., to the northwest area of the main manufacturing building. Charles Fowler, Halifax, N. S., is the architect. Modernization of machinery and equipment will be undertaken throughout the present year. Many of the smaller looms now in the weave room will be replaced with larger ones.

Eastern Mfg. Co., Selmas, N. C., is modernizing 36 spinning frames with the application of Whitin Super-Draft. A total of 9,936 spindles is involved.

Gastonia Combed Yarn Div., Botany Cottons, Inc., Gastonia, N. C., has ordered 32 Whitin Pacemaker twisters, 200 spindles each, 5-in. gauge and 3-in. ring.

Gold-Tex Fabrics Corp., Rock Hill, S. C., has ordered an Axi-Flo cleaner from Whitin Machine Works.

Graniteville Co., Graniteville, S. C., has introduced a new vinyl-coated fabric for the shoe industry that is being distributed by McCampbell & Co.

Indian Head Mills, Inc., New York, N. Y., and **J. L. Stifel & Sons, Inc.**, New York, N. Y., have announced plans to merge the two companies. Indian Head Mills operates mills at Cordova, Ala., Spartanburg, S. C., and Ponce, Puerto Rico. J. L. Stifel, which operates a cotton mill at Glendale, S. C., previously announced plans to discontinue its dyeing and printing operations at Wheeling, W. Va., and its cotton mill at Douglasville, Ga.

Lydia Cotton Mills, Clinton, S. C., has ordered two Axi-Flow cleaners and 10 Axi-Feed attachments from Whitin Machine Works.

Midwest Rug Mills, Amboy, Ill., owners of Mountain Rug Mills, Fletcher, N. C., will buy the Bernard Walker No. 2 warehouse on Thompson St., Biltmore, N. C., for establishment of a yarn-spinning plant. The company will spend some $90,000 for the property and alterations and about $100,000 for machinery. Production will start about the middle of this month, and about 75 people will be employed.

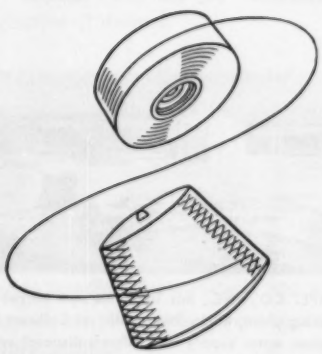
Montreal Cottons Ltd., Valleyfield, Que., subsidiary of Dominion Textiles Ltd., Montreal, Que., is planning to build a new plant with an estimated cost of $1,000,000. The estimated cost of the plant equipped is $5,000,000. Plans are by the engineering staff of Dominion Textiles, E. B. Jubien chief engineer.

Riegel Textile Corp., Trion, Ga., has installed a new James Hunter Machine Co. tenter-dryer in its cotton-fabrics plant.

Springs Cotton Mills, Chester, S. C., has announced a further expansion of the Eureka plant. Steel has already been ordered to increase by 90 ft. the length of the addition now being made to the plant. At the Lancaster plant, additions are now nearing comple-

cleaner cones and better sale yarn

when the BARBER-COLMAN AUTOMATIC SPOOLER is used to make cheeses first



The introduction of Barber-Colman AUTOMATIC SPOOLING onto cheeses between the spinning and coning can actually make BETTER SALE YARN at LOWER COST!

There are two main reasons for such results. First, the Automatic Spooler has reliable cleaning devices that automatically catch and remove such imperfections as slubs, gouts, wild yarn, and other irregularities. All knots are mechanically-tied, uniform, small, true Weaver's Knots. Second, on the winder, the package, wound from the cheese rather than from bobbins, is *completely filled without stopping,* thus producing a uniform cone with no straight winds. By eliminating stops, machine and labor costs are substantially reduced.

Cheeses from the Automatic Spooler also can be put on doubling or twisting frames or, when wound on stainless cores, can go direct to the dyeing. Many prominent Sale Yarn Mills are now using Barber-Colman Automatic Spoolers for just these reasons. *If you want to see who these mills are, write us for a copy of our Sale Yarn Mill List.*

AUTOMATIC SPOOLERS • SUPER-SPEED WARPERS • WARP TYING MACHINES • WARP DRAWING MACHINES

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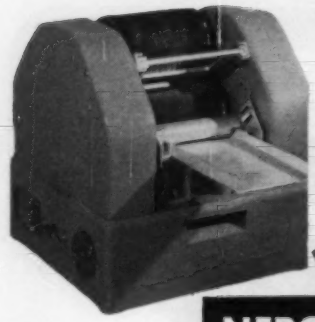

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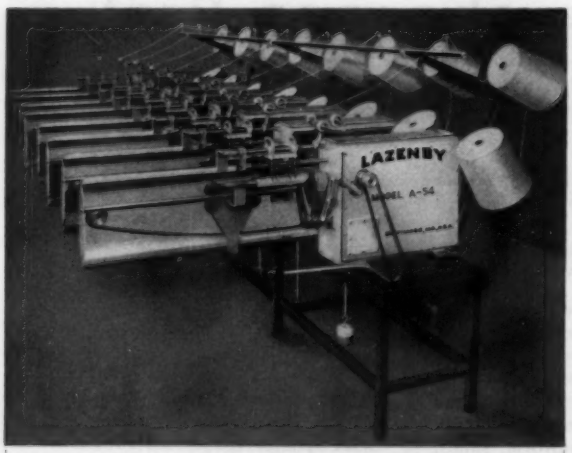

WIN COPS OF MAXIMUM DIAMETER AND LENGTH

New Automatic Winder by Lazenby, Model A-54 winds cops of maximum yardage from 8" to 22" long and 1⅛" to 2" in diameter.

- labor saving
- dial control
- quick adjusting
- quick changeover
- precision manufacture
- Timken bearing equipped

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The F. A. LAZENBY Company

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tion. Installation of 4,288 looms has already been completed. The additions at the Lancaster plant will cost more than $4,000,000. More than $1,000,000 has been spent on recent additions to the Kershaw plant, and expansion work at Fort Mill has cost in excess of $2,000,000. A two-story addition to the Springsteen plant made recently gave floor space for more slasher and spinning equipment.

Townsend Mills, Anderson, S. C., has installed 3-in. ring bobbins to replace all its old ones. The company also has added a power line and has changed over its automatic spoolers from small to large size.

WOOLEN AND WORSTED MILLS

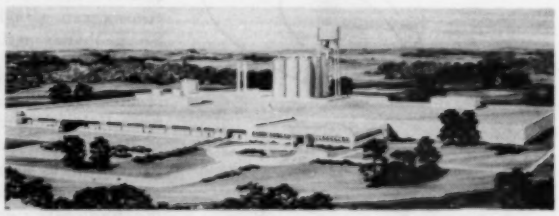
Dunn Worsted Mills, Woonsocket, R. I., has announced that it will close its plant in that city about August 30. Its worsted-yarn plant in Stafford Springs, Conn., has already closed.

James Lees & Sons, Bridgeport, Pa., is building a 14,000-sq. ft. plant at Robbinsville, N. C., that is scheduled to start weaving velvet carpet next fall.

Puritan Looms, Inc., Philadelphia, Pa., will move its weaving and spinning operation in Philadelphia, Pa., to its Arel Mills plant in Monroe. General offices and finishing and combing departments will remain in Philadelphia.

Roxbury Carpet Co., Saxsonville, Mass., has announced that a $2,000,000 expansion and modernization program is underway at the Saxsonville and Worcester plants. The Rocheford Construction Co., Framingham, Mass., is building a new addition at the Saxsonville plant. At Worcester, construction has already begun by Cabot, Cabot & Forbes through its subsidiary, Aberthaw Construction Co., on the remodeling of several buildings at Roxbury's Whittall Div.

Wallisford Mills, Keene, N. H., has taken a four-year lease on the buildings and machinery of Vermont Textiles, Inc., East Plainfield, Vt. The Vermont operation contains carding, spinning, weaving, and finishing equipment as well as its own power plant and water supply. It will produce sports outerwear fabrics, fancy skirting, and men's flannels.



BIGELOW-SANFORD CARPET CO., INC., has built this new carpet-wool preparation and yarn-making plant, Rocky River Mills, at Calhoun Falls, S. C. It has an independent water supply and effluent-disposal system. The company plans to start manufacturing this month. Architect-engineers were Lockwood Greene Engineers, Inc., New York, N. Y.

SYNTHETICS MILLS

Cabin Crafts-Needletuft Rug Mills, Springdale, Ga., has completed a 25,000-sq.-ft. addition. The new space will be used for additional production machinery and for the storage of raw and finished material. The plant has no windows and is cooled and ventilated mechanically.

The Laurel Leaf

BUSINESS MAGAZINE EDITION

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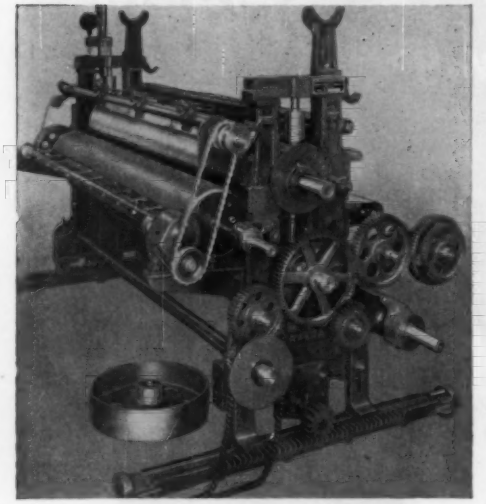

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Liberty Throwing Co., Kingston, Pa., is converting its operations from the twisting of nylon thread to the manufacture of elastic thread. The operating force will be changed from nearly all women to 75% men. At the present time some 22 new machines out of a planned 40 have been installed, and the work force will be increased from a low of 100 to about 130 in the near future.

Starr Mills Corp., Starr, N. C., has purchased three Whitin Speed-Matic winders equipped with loaders.

KNITTING MILLS

Alma Knitting Mills, Inc., Gloversville, N. Y., has agreed to transfer its plant and equipment to Leon F. Swears, Johnstown, N. Y.

Argo Knitting Mill & Bleachery, Schuylkill Haven, Pa., has started construction of a $500,000 one-story bleaching, dyeing, and knitting mill in the Willow Lake area to replace the Penn-Vall Dyeing Co. plant that was destroyed by fire.

E.M.E. Mills, Inc., Bronx, N. Y., has installed six new Mayer knitting machines for nets and laces and has 12 more machines on order.

Ess Arr Mills, Inc., San Juan, P. R., has announced the establishment of a sweater-knitting plant in Manati, P. R. The company will manufacture hand-fashioned sweaters in an 11,500 sq. ft. building leased from the Puerto Rico Industrial Development Co., a governmental agency.

Greensboro Hosiery Mills, formerly Mojud, Greensboro, N. C., has terminated its manufacture of full-fashioned hose.

Hanover Mills, Inc., Wilmington, N. C., a new knitting plant, is scheduled for completion in December.

London Hosiery Mills Ltd., London, Ont., will shortly open a branch plant in Listowel, Ont. New machinery is to be installed.

Orient Hosiery Ltd., Brockville, Ont., has transferred all equipment to the Sherbrooke, Que., division of the company.

Silknit Ltd., Toronto, Ont., has announced the formation of a new affiliate, Alamac Knitting Mills (Canada) Ltd., with offices and factory in Toronto.

Yanceyville Knitting Mills, Inc., Yanceyville, N. C., has been incorporated to manufacture half-hose and will begin operations later this summer with 16 automatic Hemphill A-R-A half-hose machines.

DYEING AND FINISHING PLANTS

Crystal Spring Bleachery, Chickamauga, Ga., has installed 40 deliveries of Whitin Model M Even-Draft drawing frames.

Graham Dyeing & Finishing, Inc., Burlington, N. C., has been incorporated with authorized capital of $100,000. Principals are Frank Crotts, Quincy Carter, Jr., and Bertha Carter.

Mount Hope Finishing Co., Butner, N. C. has added 12,000 sq. ft. of floor space and has installed a sprinkler system, erected fire walls, and cement-blocked three sides of the main plant.

Quincy Dyeworks, Inc., Woonsocket, R. I., will take over the dyeing and finishing plant of Joan Plush Mills August 16 and will use the plant for finishing goods manufactured at Providence Pile Fabrics Corp., Pawtucket, R. I., and Fisherville, Mass.

Spinrite Yarn & Dyers Ltd., Listowel, Ont., will erect a one-story addition at an estimated cost of $8,000.

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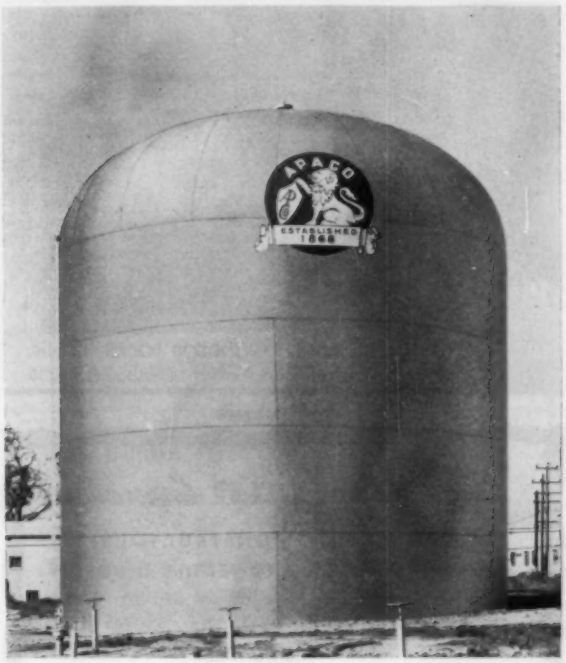

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NEWS ABOUT MEN

Flay E. Alexander has been appointed superintendent of the J. P. Stevens & Co., Inc., plant at Whitmire, S. C.

Bruce C. Baker has retired as general superintendent of Pacific Columbia Mills, Columbia, S. C.

P. B. Baldwin has resigned as vice president of Collins & Aikman Corp., New York, N. Y., for reasons of health. He will continue as a director and consultant.

Frank E. Barron has been appointed assistant superintendent of the Fieldcrest Mills, Inc., plant at Leaksville, N. C.

Elliot Broadbent has been elected executive vice president of Sayles Finishing Plants, Inc., and Sayles Biltmore Bleacheries, Inc., Saylesville, R. I. He will continue to manage Glenlyon Print Works Division.

James D. Chandler has been named vice president of Arista Mills, Winston-Salem, N. C.

John P. Chubet has been appointed executive vice president of Hightstown Rug Co., Hightstown, N. J.

John M. Dempsey has been elected vice president of Collins & Aikman Corp., New York, N. Y. Mr. Dempsey was formerly general manager of the Cavell Division.

C. Jeter Glenn has been appointed technical superintendent of Abbeville Mills, Abbeville, S. C.

John Goodwill has joined Vertipile, Inc., Lowell, Mass. He formerly was with Massachusetts Mohair Plush Co.

Virgil Hall has been promoted to assistant to F. W. Flein, assistant mill manager at Fieldcrest Mills' Karastan Rug Mill, Leaksville, N. C.

Thomas W. Hillyard is retiring as vice president and director of Munsingwear, Inc., Minneapolis, Minn.

Robert H. Jones has been appointed manager of Kingstree Mfg. Co., Kingstree, S. C. He formerly was superintendent of Hatch Mill, Columbus, N. C.

JOSEPH JERVIS, JR., has been appointed plant manager of Bristol Mills, yarn-making operation of Bigelow-Sanford Carpet Co. at Bristol, Va.

John H. McMahon has retired as chairman of the board of Berkshire Hathaway, Inc., Providence, R. I., for reasons of health. He will continue as a member of the board and as a consultant to the company.

Harold May has been promoted to general manager of Cranston Print Works, Inc., Cranston, R. I.

Sam Neaves has taken over full direction of Chatham Mfg. Co.'s newly acquired plant at Springfield, Tenn. One of his main assignments will be to coordinate the production of Springfield Woolen Mills with other mills in the Chatham organization.

Robert Nields has been named general manager of sales and production at Ware Knitters, Inc., Gilbertville, Mass.

Edgar M. Norris has been elected president and treasurer of Norris Cotton Mills Co., Cateechee, S. C.

Van Oxner, Jr., has been promoted to overseer of carding at Lydia Mills, Clinton, S. C.

W. A. Pearson has been promoted to superintendent of the Ware Shoals Div., Riegel Textile Corp., Ware Shoals, S. C.

Horace Pennington, Cone Mills Corp., Greensboro, N. C., has been elected president of the Southern Textile Association.

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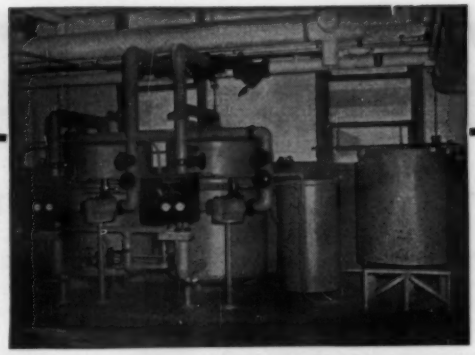

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NEWS ABOUT MEN Continued

Frank E. Slack has resigned as executive vice president of the Association of Yarn Distributors.

George P. Smart has become head of the carding and spinning departments of Excelsior Mills, Union, S. C.

William Smith has been named superintendent of Sachen Mill, Swannanoa, N. C.

W. H. Sparks, president of Sparks, Inc., Dalton, Ga., has been elected president of the Tufted Textile Manufacturers Association.

W. H. Stallworth has been promoted to production superintendent at Hatch Hill, Columbus, N. C.

Frank Starling has been named superintendent of Proximity Plant, Cone Mills Corp., Greensboro, N. C.

John P. Stevens, Jr., chairman of J. P. Stevens & Co., Inc., New York, N. Y., has been elected president of the National Association of Wool Manufacturers.

John Szoczech has joined the dyeing department of Botany Finishing Co., Passaic, N. J.

Raymond Torgerson has been appointed head of the design department of Holeproof Hosiery Co., Milwaukee, Wis.

M. M. Tuttle has been appointed general manager of the Carolina mills of American Thread Co. at Clover, S. C., and Troutman and Sevier, N. C.

John Wall, manager, Albany Felt Co., N. Monmouth, Me., has been elected president of the Maine Woolen & Worsted Manufacturers Association.

R. Frederick Walters has joined Compania Textilera Ariguanabo, Bauta, Cuba, as supervisor of methods and standards.

Elmer C. Wendorf has joined Burlington Hosiery Co., Asheboro, N. C., and is in charge of styling, designing, and development work for its men's and children's division.

Lex Willett has retired as superintendent of the No. 7 plant, Cannon Mills, Salisbury, N. C.

Textile World

OBITUARY

Bernard Bernstein, 78, president and treasurer of Bernson Silk Mills, New York, N. Y., and Buena Vista, Va.

Charles H. Brook, 74, comptroller, Goodyear Tire & Rubber Co., Akron, Ohio.

John Duff, Jr., 67, former president of Soule Mills, New Bedford, Mass.

William Gallon, 76, former vice president of J. P. Stevens & Co., New York, N. Y.

J. Y. Jones, 80, former superintendent of Newberry Cotton Mills, Newberry, S. C.

Israel I. Kotzen, 84, board chairman of Revere Knitting Mills, Malden, Mass.

Nathan Alexander Long, 50, former general manager of Long Finishing Mills, Inc., Burlington, N. C.

Henry M. McAden, 85, former president of McAden Mills, McAdenville, N. C.

Max B. Mueller, 70, president of Carlton Hill Hosiery Mills, Carlton Hill, N. J.

George W. Murphy, 61, general manager and director of Mary Leila Cotton Mills, Greensboro, N. C.

Edward E. Poor, 67, retired vice president of Standard Bleachery & Printing Co., Carlton Hill, N. J.

Maurice N. Roux, 52, former president of Philadelphia Penn Worsted Co., Philadelphia, Pa.

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100 END

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1—Stokes Staple Cutter
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8—Whitin Roller Top Cards, 40", age 1948
10—Reiter Cards, flats, 40", 3—Coilers, motor—1950
66—H & B Cards, flats, 40", 14" coilers, 1920
7—Whitin Drawing, model L2, 5 del. age 1951
2—Whitin Roving, model G10C, 10 x 5, 120 spdls. 1953
9—Whitin Roving, model G8, 8 x 4, 138 spdls. 1947
20—Whitin Spinning Frames, model F2, tape, Casablanca L. D. 4" ga. 240 spdls. 1947
38—Whitin Spinning Frames, model F, tape, 3¼" ga. 2" ring, 240 spdls.
5—Whitin Spinning Frames, model F, tape, 3½" ga. 2¼" ring, 228 spdls.
21—Whitin Twisters, model BB, 4½" ga. 8" traverse, tape, age 1950
2—Abbott Cone Winders, model 65, 100 spdls. hoist & conveyor, age 1954
5—Universal Roto Coners, model 44, 100 spdls. age 1948-50
20—Scharer Auto Quillers, 10 spdls. 1947-49
1—Tenell Quill Stripper, model L
1—H & W Yarn Conditioner, #ST-2, age 1950
1—Cocker Hi-Speed Warper 54", Creel 1 74 ends, age 1948
1—Uxbridge Hot Air Slasher, 82" headway, age 1948
1—Cocker 9 Cam Drum Slasher, 60" headway
2—Johnson 7 Can Drum Slashers, 66 x 52" headway
48—C & K C5 Looms, 46", 20 harness dobby, 1949
72—C & K C4 Looms, 72", 20 harness dobby, 1949
24—C & K S3 Looms, 48", 20 harness dobby
15—C & K 4 x 1 Looms, 50", 1200 hook, Jacquards
1—Uster Tying-In Unit, 71" wide, age 1949
1—B-C Portable Tying-In, model LL
1—Curtis & Marble Shear, 66", 4 blade, 1938
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1—Gaston County 6 port, Package Dryer, 1950
4—Venango Stainless Enclosed Dye Boxes, 6 x 10'—1950
6—Van Vlaanderan Stainless Dye Jiggs, 60", motor
11—Werner Stainless Dye Jiggs, 70", motor
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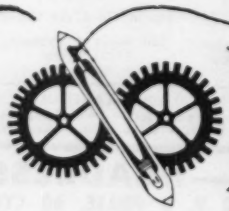

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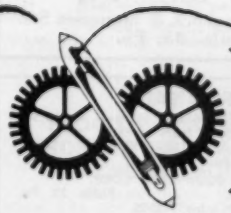

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Allis Co., Louis	173	F
Alvey Conveyor Mfg. Co.	203	P
American Enka Corp.	193	G
American Moistening Co.	14	A
American Monorail Co.	44	D
American Viscose Corp.	185	G
Andrews & Goodrich Div. J. O. Ross Eng'g. Co.	154	E
Anheuser-Busch, Inc.	164	C
Antara Chemical Div. General Aniline & Film Corp.	45	C
Armstrong Cork Co.	38-39	T
Atkinson, Haserick & Co., Inc.	108	T
Aurora Pump Div., The New York Air Brake Co.	182	H

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Bahnson Company	12	A
Barber-Colman Co., Textile Div.	207	R
Becco Chemical Div. Food Machry. & Chem. Corp.	116	C
Bemis Bro. Bag Co.	10	P
Brainard Steel Div., Sharon Steel Corp.	33	P
Branson Co.	175	G
Buffalo Forge Co.	205	A
Caldwell Co., Inc., W. E.	212	B, E
Celanese Corp. of America Textile Div.	181	G

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Gastonia

Precision-built CAGE SCREENS

for MAXIMUM STRENGTH and DURABILITY

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The combination of special machinery and our exclusive welding techniques produce perfectly-formed screens having maximum strength and durability.

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- Waste Machine screens
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Cities Service Oil Co.	137	M
Cleveland Tramrail Div., The Cleveland Crane & Eng'g. Co.	199	P
Clinton Corn Processing Co.	178	C
Cole Mfg. Co., R. D.	211	B E
Continental-Diamond Fibre Div. The Budd Co., Inc.	190	T
Corn Prods. Sales Co.	201	C
Cosa Corp., Textile Div.	166	E
Crane Co.	52	H
Crompton-Richmond Co., Inc.	202	N
Crucible Steel Co.	134	O
Dary Ring Traveler Co.	204	T
Davis & Furber Mach. Co.	176	T
Dayton Rubber Co., The Textile Div.	50-51	RT
Denman Textile Rubber Co.	153	R
Deutscher Spinnereimaschinenbau, Ingolstadt	29	T
Diehl Mfg. Co.	54	F Q
Dodge Mfg. Corp.	188	Q
Dow Chemical Co.	177	C
Draper Corporation	1	R
Dronsfield Bros. Ltd.	225	T
Duesberg-Bosson of America, Inc.	210	T
duPont de Nemours & Co., Inc. Tex. Fiber Div.	34-35	G
Eastman Machine Co.	213	E
Eaton Mfg. Co., Dynamatic Div.	125	Q
Esso Standard Oil Co.	147	M
Fairbanks, Morse & Co.	163	K
Fairtex Corp.	175	G
Fidelity Machine Co., Inc.	151	L
Foster Machine Co.	121	T
Foxboro Co.	191	K
Franklin Process Co.	28	G
Gardner-Denver Co.	42	H
Gastonia Textile Sheet Metal Works, Inc.	224	T
Gates Rubber Co.	5	R
Gaylord Container Corp. Div. of Crown Zellerbach Corp.	143	P
Goodrich Chem. Co., B. F.	30	C
Goodyear Tire & Rubber Co., Inc.	11	C
Gulf Oil Corp.	41	M
Harshaw Chemical Co.	123	C
Haskell-Dawes Mach. Co., Inc.	182	T
Hayssen Mfg. Co.	8	P
Herr Mfg. Co., Inc.	195	T
Hungerford & Terry, Inc.	213	B
Hunter Machine Co., James	31	E
Hyatt Bearings Div., General Motors Corp.	141	O Q
Ideal Industries, Inc.	198	T
Ives Co., L. T.	36	L

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Jenkins Bros	55	H
Jenkins' Sons, Inc., M. W.	194	E
Johnson Corp., The	204	H
Johnson Bronze Co.	206	O...Q
Keever Starch Co.	156	C
Kuljian Corp., The	212	N
Lane & Bros. Inc., W. T.	209	P
Laurel Soap Mfg. Co., Inc.	209	C
Lazenby Co., The F. A.	208	T
Leighton Machine Co.	127	L
Lincoln Eng'g. Co.	131	M
Lindly & Co., Inc.	180	K
Link-Belt Co.	7	Q
Loper Co., Ralph E.	214	N
Main, Inc., Chas. T.	214	N
Marshall & Williams Corp.	226	E
M-B Products Co.	184	H
McBride, Ed. J.	6	R
Metallizing Engineering Co., Inc.	200	O...Q
Micro Switch Div. of Minneapolis-Honeywell Reg. Co.	183	F
Minneapolis-Honeywell Reg. Co. Micro Switch Div.	183	F
Moisture Register Co.	196	K
Monsanto Chemical Co. Plastic Div.	169	C
Montgomery Co., The	212	G
Morton Salt Co.	145	C
National Aniline Div. Allied Chem. & Dye Corp.	25	C
National Starch Products Inc.	171	C
Naugatuck Chem. Div., U. S. Rubber Co.	133	C
New Departure Div. of General Motors Corp.	15	O...Q
Ordnance Gauge Co.	174	L
Parks-Cramer Co.	16	A...D
Platt Bros. Ltd.	108	T
Precision Gear & Mach. Co.	192	Q
Proctor & Schwartz, Inc.	179	E
Reeves Div., Reliance Elec. & Eng'g. Co.	159	Q
Republic Steel Corp.	160-161	O
Riggs & Lombard, Inc.	40	E
Robert & Co. Associates	2nd Cover	N
Roberts Co.	9	T
Rohm & Haas Co.	114	C
Ruppright's Rotary Roof Cooler	212	N
Ryerson & Son Inc., J. T.	174	O
Saco-Lowell Shops	32, 110	T
Sandoz, Inc.	43	C
Scherr Co., Inc., George	214	E

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CARD GRINDING WITH ABSOLUTE ACCURACY

DRONSFIELD'S PATENT MOTOR-DRIVEN FLAT SURFACE GRINDING MACHINE No. 241.

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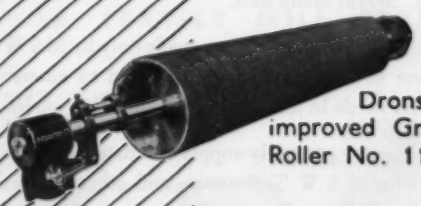

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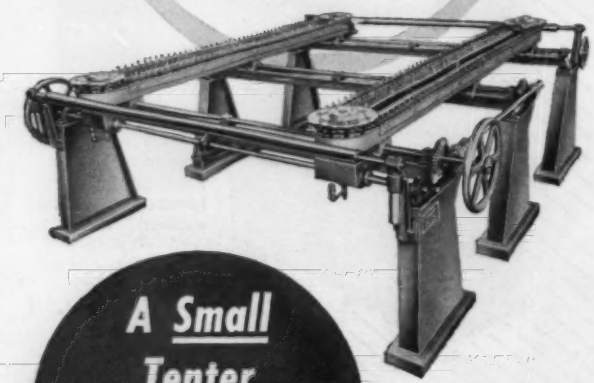

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Schmeing, Gebr	20b	R
Schweiter Ltd.	26	R
Scragg Ltd., Sydney & E.	189	T
Sheffield Corp., The	210	K
Sherwin-Williams Co.	165	C
Solvay Process Div. Allied Chem. & Dye Corp.	129, 211	C T
Sonoco Products Co.	46	
Spraying Systems Co.	213	A
Stauffer Chem. Co.	167	C
Stephens-Adamson Mfg. Co.	155	O Q
Stowe-Woodward, Inc.	149	E
Tennant Co., G. H.	168	D
Textile Banking Co.	170	N
Textile Machine Works	58	L
Tompkins Bros. Co.	184	L
Torrington Co., The (Bearings)	197	O Q
Towmotor Corp.	53	P
Turbo Machine Co.	60, 138	T
Union Bag-Camp Paper Corp.	56-57	P
Unionmatex, Textilmaschinen-Union G.M.B.H.	27	E
U. S. Rubber Co. Naugatuck Chem. Div.	133	C
Utica Novelty & Mill Specialty Co.	200	E L
Veeder-Root, Inc.	4th Cover	K
Vickers Inc. Div. of Sperry-Rand Corp.	37	E H O
Victor Ring Traveler Co.	187	T
Warner & Swasey Co.	47	T
Watson & Desmond	223	T
West Penn Power Co.	172	N
West Point Foundry & Machine Co.	112-113	R
Whitin Machine Works	13, 26	T
Wildman-Jacquard Co.	2	I
Wood's Sons Co., T. B.	162	Q
Wright Mchry. Co. Div. of Sperry-Rand Corp.	208	K

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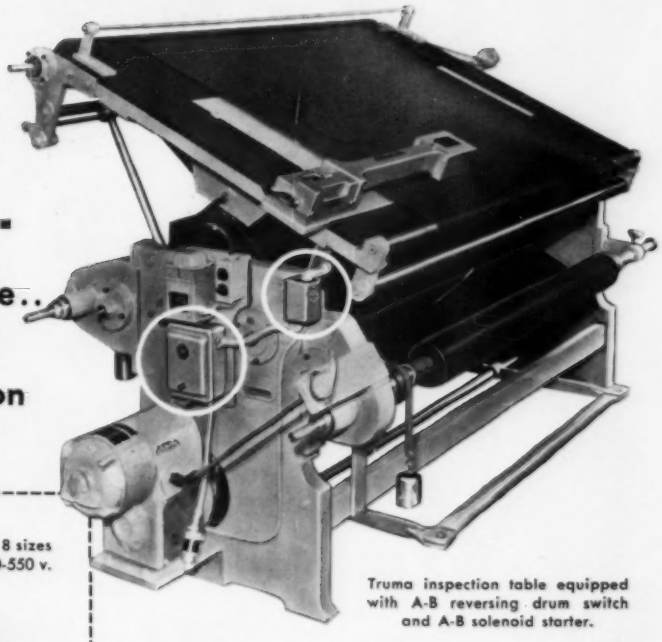
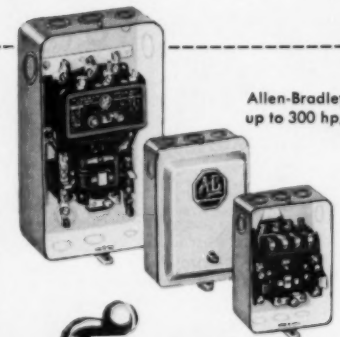
TEXTILE MACHINES...

like this TRUMA inspection table.. need "quality" control—for continuously reliable operation



Truma inspection table equipped with A-B reversing drum switch and A-B solenoid starter.



Allen-Bradley solenoid starters; 8 sizes up to 300 hp, 220 v; 600 hp, 440-550 v.

The Sign of QUALITY Motor Control

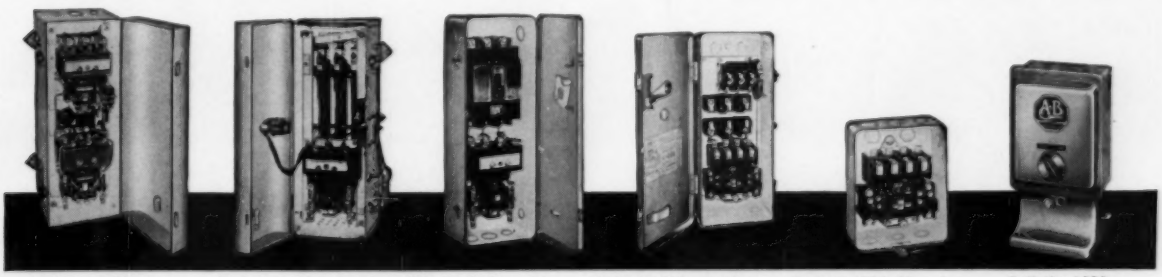
Bulletin 350 drum type reversing switch. Open view to show contacts and terminals.

Here is a textile inspection machine—recognized for its quality—equipped with Allen-Bradley motor controls . . . consisting of a Bulletin 709 solenoid starter and a handy Bulletin 350 drum reversing switch within easy reach of the operator.

The drum switch controls the solenoid starter and the direction of rotation of the motor. Protection against motor burnout, due to overloading, is provided by two thermal overload relays which remain accurate and reliable, irrespective of operating conditions or age of the installation. The double break, silver alloy contacts never require filing, cleaning, or dressing. They are always in perfect operating condition.

Some of the Allen-Bradley line of textile mill controls is shown below. It is fully described in the Allen-Bradley Handy Catalog. Please send for your copy.

ALLEN-BRADLEY QUALITY CONTROLS FOR TEXTILE MILL SERVICE



Bulletin 740 automatic velvet smooth motor starter.

Bulletin 640 manual stepless resistance motor starter.

Bulletin 713 combination starter with circuit breaker.

Bulletin 712 combination starter with fused, visible contact, disconnect switch.

Bulletin 709 Size 1 automatic across-the-line motor starter.

Bulletin 1209 manual loom switch—pedestal mounting.

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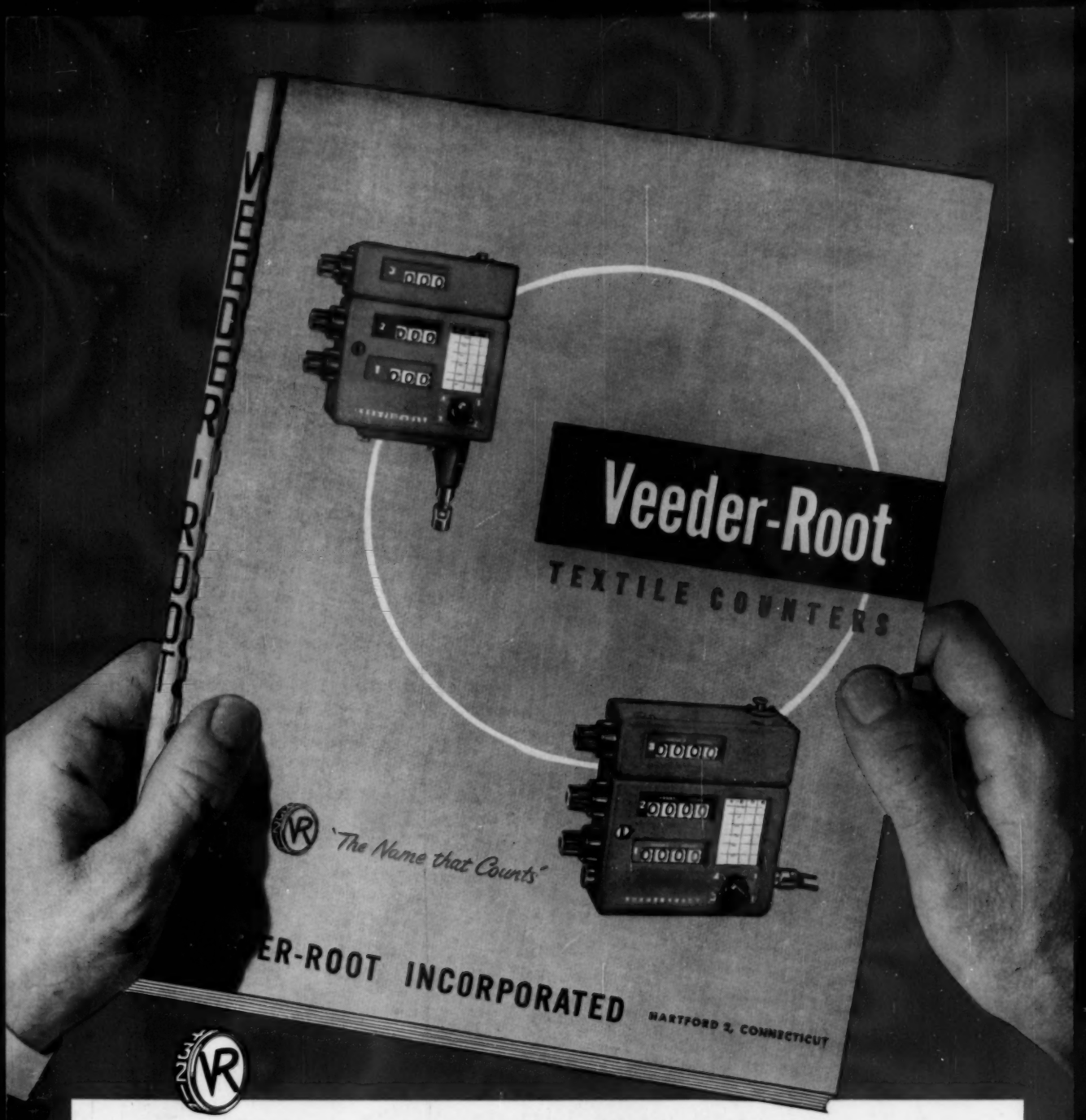

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